Marine Review

SHIP OPERATION SHIPBUILDING CARGO HANDLING

The National Publication Covering the Business of Transportation by Water

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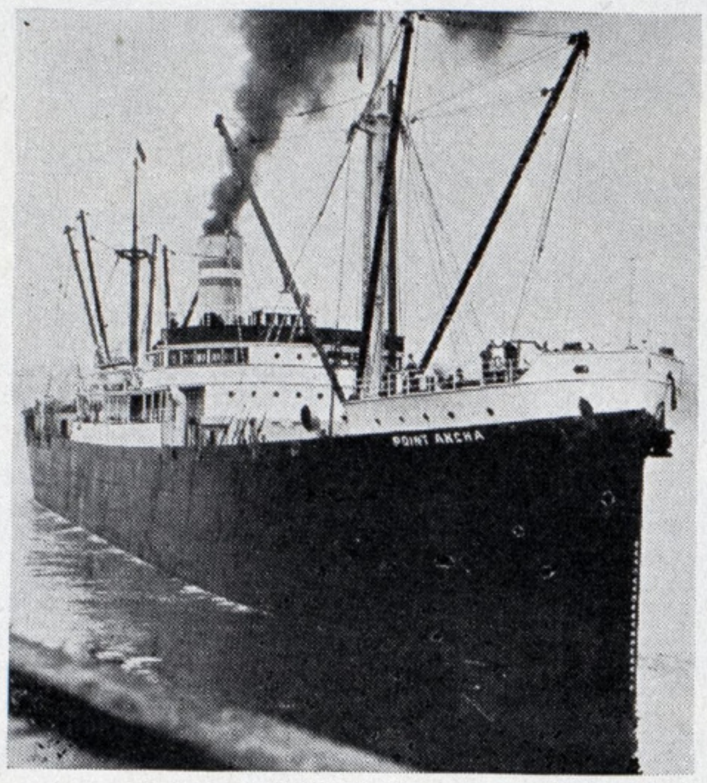

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WE DO OUR PART

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FOUNDED 1878
SHIP OPERATION - SHIPBUILDING - CARGO HANDLING
Volume 64 January, 1934 Number 1

American Merchant Marine, A Reply to Its Critics

IF SUCCESS may be measured, to some extent at least, by the notice taken by competitors, the American merchant marine is on a fair way to become a real factor in world shipping. Lately criticism aimed at American shipping and our national merchant marine policy has been especially active, particularly so from Great Britain. What we consider an eminently fair reply to foreign critics of American shipping has been made by Franklin D. Mooney, president of the Atlantic Gulf and West Indies Steamship Lines and chairman of the committee on foreign competition of the American steamship lines. Mr. Mooney said in part:

"American shipowners are compelled to reiterate, once again, that we are not seeking the cargo of Great Britain or any other nation. We carry but a third of the freight originating within our own borders. Sixty per cent of Great Britain's ships must seek employment in outside trades. Our vessels are confined almost exclusively to our own business.

"Walter Runciman, president of the British board of trade, on Dec. 4 asked Britons to use only English ships. Such a policy, extended to other nations, would wreck the British merchant marine. English vessels carry almost half the trade of the entire world. They carry a third of the American business, as much as we ourselves carry. Yet Alexander Shaw complains because a couple of American lines have picked up a little freight in the Far East.

"Any move to reserve the business of ocean transport to the country of origin would be to the detriment of England and the wholesale advantage of this country. We originate more commerce than any other nation. Reserving our trade to domestic flag ships would give us the mightiest ocean fleet on earth. In the passenger carrying trades, we are in an even more fortunate position. Americans constitute 70 per cent of all travelers on the North Atlantic. We pay 85 per cent of the fares and occupy 95 per cent of all first class cabins. Withdrawal of American patronage would ruin every foreign line serving on our shores. Such an eventuality is sincerely to be deplored, but could easily come about through public preference should international conditions convince the American people of the wisdom of such a course.

"Mr. Shaw characterized the American merchant marine policy of the United States as a 'big stick'. American shipowners earnestly deny that there is any big stick involved. If we were carrying as much of Great Britains' commerce as she herself carries, if we were carrying the bulk of her passengers, if we were running holiday cruises out of her ports, and demanding a still greater share of her business, then we might justly be accused of wielding a 'big stick'. We give two-thirds of our freight to foreign ships and about three-fourths of our passengers. Any greater percentage would mean the extinction of American lines in foreign trade.

"The principle of government support for shipping, as provided in the Jones-White act of 1928, seems to anger our foreign friends most of all. All of the woes of world shipping are laid at our door. Our policy is variously described as unfair, unethical, unfriendly. British shipowners know full well that, without some form of government aid, American vessels cannot possibly compete with the more cheaply operated vessels of foreign powers. Either we have some measure of support to offset the higher cost of operating under the American flag, or we have no ships in foreign trade.

"Another foreign charge has to do with the alleged dumping of a vessel tonnage by the United States. This country has built 42 ships as a result of the merchant marine act. Our competitors have turned them out literally by the hundred. England has outbuilt us ten to one during the past decade. At this very moment, when Mr. Shaw is loudly proclaiming our

guilt in the matter of excessive construction, Great Britain and Irish yards have on the ways more than 300,000 tons of new building. The United States has exactly 14,654 tons. Our construction is 2 per cent of the world today. England has 40 per cent. The British figure includes two large vessels being constructed for one of Mr. Shaw's own companies, with a third about to be started."

Thus in part did Mr. Mooney reply to British criticism of our merchant marine policy. What it comes to, as we see it, is a determination on the part of British shipping men to fight, with all the resources at their command, any developments which may have the effect of altering, even in the slightest degree, the status quo of Great Britain's position in world shipping, regardless of the inherent justice of the desire of the United States, a great mercantile nation, to have a reasonably adequate merchant marine of its own.

Protest Navy Yard Ship Construction

THE extensive shipbuliding program of vessels for the United States coast guard, made possible by the public works section of the national industrial recovery act, was intended, we take it, to give much needed employment to the established private shipyards of the country. In order to spread this work among the greatest possible number of workmen in the industry, the public works administrator, in asking for bids for the building of these vessels, restricted the hours of labor to 30 per week. Rates of pay per hour were also increased over those generally paid in the industry, in order to compensate for the shorter working week.

A number of private yards accepted these conditions and submitted firm bids, only to find that estimates were received from navy yards for building the vessels on the basis of the prevailing work week in these establishments, of 40 hours and at their regular rates of hourly pay. As a result of the estimates submitted, award has already been made to the Charleston navy yard, Charleston, S. C., for the construction of four United States coast guard harbor cutters Nos. 61 to 64 inclusive.

This is manifestly unfair and cannot be justified if it is assumed that the government intends to give equal treatment to all concerned. A number of private shipyards have also submitted bids for nine coast guard ocean cruising cutters Nos. 65 to 73, large steel ships. Three navy yards, New York, Philadelphia and Mare Island, also submitted estimates for building these cutters.

In all fairness, we feel sure that the public works administrator will give careful consideration to the National Council of American Shipbuilders, representing over 90 per cent of the capacity of the shipbuilding industry of the United States, in its protest against the award of the coast guard harbor cutters to the Charleston navy yard, and the council's further protest in connection with the award of the larger coast guard vessels to navy yards.

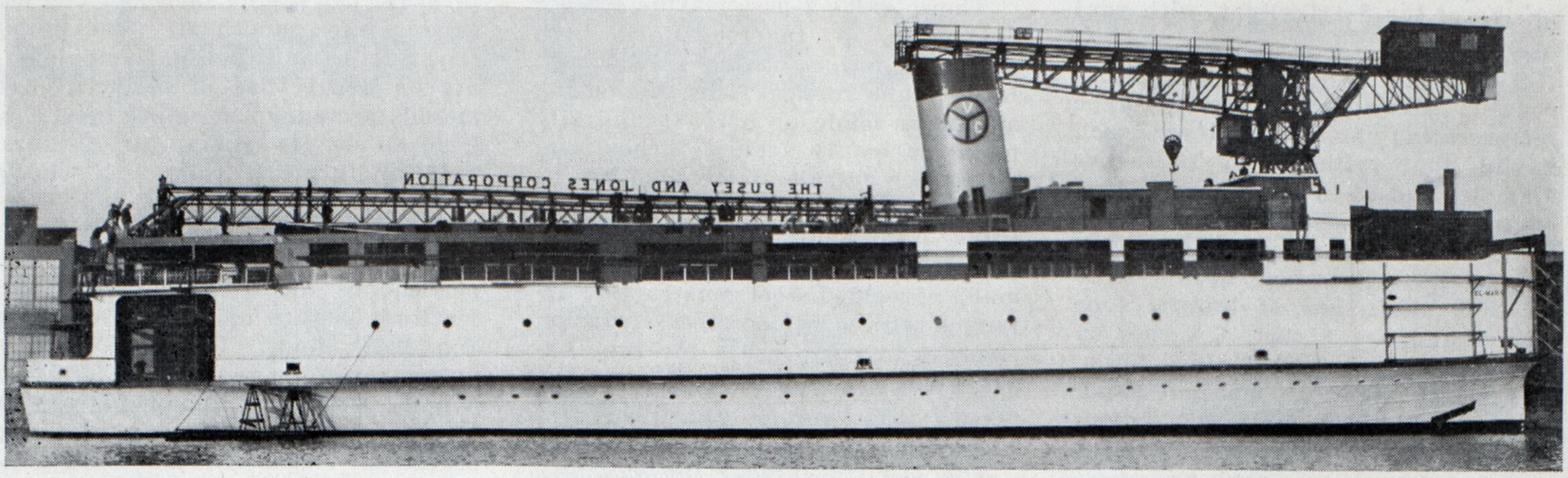
The formal protest of the National Council of American Shipbuilders, which we support in every respect, calls attention to the fact that estimates, submitted by the navy yards, on the basis of 40 hours a week and navy yard wage scales, do not comply with the requirements for private bidders who are operating under a code of fair competition and trade practice approved by the government and in a few instances, in smaller yards, in accordance with the hours and wage rates required by the public works administration.

The National Council contends, and rightly so, that award of contracts to navy yards on the basis of estimates—not firm bids—and different hours and wage requirements than those of private yards, is unfair practice and is directly opposed to the purposes of the National Industrial Recovery act.

Keep the Coast Guard Separate

TALK of merging the activities of the United States coast guard with the navy has aroused widespread protest from all sections of the country. The coast guard and the navy should be kept separate. The respective functions of the two services should make this apparent. The coast guard is essentially a service for the protection of shipping. Its additional duties of preventing the violation of the customs laws are complementary to its primary purpose and constitute a regulatory and police function rather than a naval operation.

It is all very well to suggest that the merger would not mean the elimination of the coast guard as a separate organization; that it would hold to the navy somewhat the relation of the marine corps, but the conditions are entirely different. Here is a service of a long and fine tradition in the saving of human life and in the protection of property at sea. It can best be developed and strengthened in all its activities by a separate and independent status and those intimately acquainted with the work of the coast guard are now its most ardent defenders. Any need of strengthening or reorganization of the service for greater efficiency can best be accomplished by keeping it an independent agency of the government.



Delmarva, passenger and automobile transport steamer, shortly after launching, Nov. 2, 1933, at Wilmington, Del.

DELMARVA,

New Transport Steamer for Chesapeake Bay

THE passenger and automobile transport steamer DELMARVA, built by the Pusey & Jones Corp., Wilmington, Del., was launched Nov. 2 and was scheduled for delivery in December. The Virginia Ferry Corp., a subsidiary of the Pennsylvania railroad, is the owner. The new vessel was designed for transporting passengers and automobiles between Cape Charles, Va., and Little Creek, Va., and is of steel construction throughout, with fireproof bulkheads in cabin spaces and crews' quarters, All of the latest requirements of the United States steamboat inspection service have been fully complied with.

Principal dimensions are as follows: Length overall, 260 feet; beam over guards, 59 feet; depth molded amidships, 19 feet, 1 inch; draft, with a load of 250 tons, 10 feet.

Four decks are fitted viz., lower, main, promenade and boat deck.

On the lower deck, the various spaces are arranged as follows: A bar room for white passengers is located aft of the engine room. The galley, crew's mess room and storeroom are located aft of the bar room. Crew's quarters with accommodation for 27 in the ship's crew and a special room to accommodate 24 truck drivers are located forward of the boiler room.

Space Arranged for Service

The galley is equipped with a steel range, steel dressers and work tables and all modern conveniences for supplying meals to crew and passengers. The total normal passenger carrying capacity is 400. A dumb waiter is installed in the galley for service to the passengers' lunch room and dining room located above on the promenade deck.

Crew's quarters, referred to above, are fitted with metal berths, metal lockers, showers, tables and chairs. Access to the truck drivers' room is through a watertight horizontal sliding door from the crew's quarters.

The main deck is plated with "knobby" pattern checkered steel plates to prevent slipping and skidding of automobiles which are carried on this deck. A steel wagonway log is fitted at sides terminating in a stairway landing at each end, port and starboard, for steel stairs leading up to the promenade deck. Engine and boiler room casings and ventilation trunks are located off centerline, port and starboard and are surrounded by a steel wagonway log thus forming three lanes for automobiles and trucks. Companionways for access to the lower deck, engine and boiler rooms, are also located on these wagonway logs.

The after end of the main deck is open above the steel bulwarks fitted with hinged gangway doors for loading and unloading. Forward of this point the steel sides extend up to the promenade deck with large double watertight steel doors at forward end for loading and unloading. These watertight doors are operated by rack and pinion gears under the promenade deck, connected to worm gear and hand wheel on each half of door.

At the after end of the main deck there is a capstan, port and starboard, operated from the lower deck by electric motors with extended shafts. At the forward end of the main deck there is a similar capstan on the starboard side and a combined capstan and windlass on the port side for handling the anchor. Both of these are driven from below deck by electric motors with extended shafts similar to those at the after end. The anchor is stowed on an inclined platform and slides overboard through a double door when released.

The promenade deck aft is arranged for the accommodation of 100 colored passengers. This space is fitted with a dance floor, toilets, seats and lunch tables.

The promenade deck forward of this space is arranged to accommodate 300 white passengers with lunch room, dining alcoves, women's rest room, maid's room, toilet, purser's room, and dance floor. The cabin is fitted with massive leather upholstered divans and chairs, arranged for the comfort of passengers. A special room is located on this deck to house the ventilation and heating fans for supplying fresh cool air or heated air to all cabins and passenger spaces, through large galvanized sheet metal ducts.

Main Propelling Machinery

Lifeboats and life rafts in number and specifications complying with the latest requirements of the United States steamboat inspection service, are located on the boat deck. Galley and pantry exhaust fans, fans and heaters for the ventilating and heating systems are housed in a room located on the skylight of the boat deck. Officers' quarters with toilets and a separate room with connecting bath for the use of the owner's representatives are located on the boat deck forward of the stack. The pilot house is located forward of the officers' house and is equipped with all modern devices for safe navigation. The vessel has one mast located

on top of the flat skylight, with yard arm.

The main propelling machinery consists of two Skinner unaflow type reciprocating steam engines, each having four cylinders of 19 inches diameter and 20 inches stroke. Each engine is direct connected through a Kingsbury thrust to line and propeller shafting. The two propellers, one on each shaft, are of bronze, four bladed and are 8 feet, 6 inches in diameter and 10 feet, ½ inch pitch. One is right hand and one left hand. They were made by Ferguson & Son, Hoboken, N. J.

When operating on 275 pounds per square inch pressure steam with 200 degrees Fahr. superheat at the throttle and exhausting into a 26-inch vacuum, each engine will develop continuously 1400 shaft horsepower at 200 revolutions per minute. Steam consumption at full load condition is guaranteed not to exceed 11 pounds per shaft horsepower per hour.

The engines are force lubricated by means of independent pumps for circulating oil through cooler and bearings. Cylinders are lubricated by a positive force feed pump, injecting pure mineral oil into the steamline ahead of the throttle valve and at each inlet valve. These engines were designed and built by the Skinner Engine Co. Erie, Pa.

Oil Burning Watertube Boilers

Steam is supplied by two Babcock & Wilcox watertube marine boilers with a total heating surface of 3826 square feet for each boiler and a total superheating surface of 371 square feet for each boiler. The boilers are arranged for oil burning and are designed for a working pressure of 285 pounds per square inch at the superheater outlet; also for superheat of 200 degrees Fahr. The boilers are constructed for a pressure of 322 pounds per square inch and are equipped with soot blowers supplied by the Diamond Power Specialty Corp.

The fuel oil burning equipment was supplied by the Todd Dry Dock Engineering & Repair Corp. It consists of eight model C air registers, each complete with a mechanical pressure atomizing burner. Four burners are fitted to each boiler. Other auxiliaries in connection with the oil burning system are: two double boiler coil type fuel oil heaters; two 5½ x 3¾ x 5 inches steam duplex horizontal pumps; also suction and discharge strainers, oil meters, etc.

Induced draft for the boilers is provided by a motor driven fan supplied by the Buffalo Forge Co. This fan handles 30,000 cubic feet per minute, with a static pressure of 2⅞ inches. It operates at 1102 revolutions per minute and a gas temperature of 750 degrees Fahr.

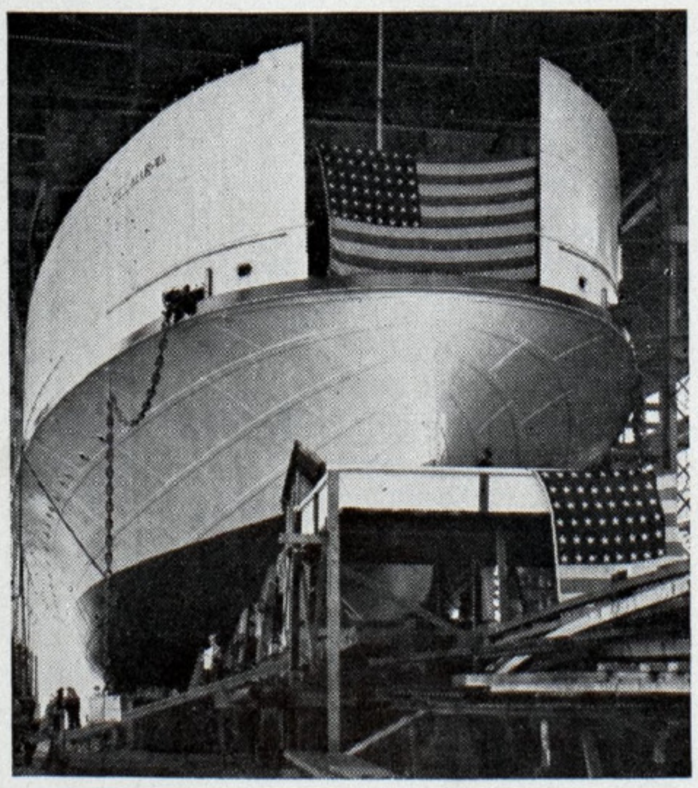
There is one 2-pass marine surface condenser, of Ingersoll-Rand high efficiency design, having 1625 square feet of tube surface. This condensing surface is made up of 788 admiralty metal tubes, 10 feet, 6 inches long by ¾-inch outside diameter of No. 18 Birmingham wire gage. The tubes are rolled into Muntz metal tube sheets at both ends. The condenser shell is made of welded steel construction arranged with a welded steel expansion element to compensate for tube expansion. There are two single stage air ejectors each of 34 pounds per hour free dry air capacity.

The electric current for auxiliary power and lighting is furnished by two 50 kilowatts Westinghouse geared turbine generating sets, two wire, 125-volt, direct current. The turbine operates on 275 pounds gage presure steam, 200 degrees Fahr. superheat, and 10 pounds per square inch back pressure.

Pumps and Services

A complete modern pumping equipment has been instaleld on the DELMARVA. The following pumps were supplied by the Warren Steam Pump Co., Warren, Mass. For main circulating water, one 14-inch single stage double suction pump driven by a Westinghouse turbine. Capacity of this pumps is 4000 gallons per minute at a 22-foot head. For fire and general service, one 12 x 8½ x 12 inches, horizontal, duplex, piston pump with a capacity of 350 gallons per minute at a head of 150 pounds. Two boiler feed pumps, 12 x 7 x 24 inches, vertical, single, piston pumps each with a capacity of 76 gallons per minute. For condensate, two 2-inch, single stage, double suction, horizontal centrifugal pumps with a capacity of 76 gallons per minute at 84-foot head, direct connected through flexible coupling with a 5 horsepower, 115 volts, direct current Westinghouse motor.

The circulating pump turbine operates with steam at 285 pounds pressure per square inch and 200 degrees Fahr. superheat. The boiler feed pumps, and fuel oil pumps operate on desuperheated steam of 275 pounds pressure per square inch. The general service pump, air ejectors, fuel oil heating coils, sea chests blows, steering engine and bilge ejectors operate on desuperheated reduced steam at 150 pounds pressure per square inch. The whistle and ejectors operate on saturated steam and 322 pounds. Steam to heating units operate on reduced steam at 50 pounds pressure. Reduced steam at 15 pounds pressure is used for galley purposes. Back pressure in the general exhaust line from auxiliaries is 10 pounds pressure.



Ferry Steamer Delmarva, Bow View

Other engine room auxiliaries include one improved Paracoil feedwater heater supplied by Davis Engineering Corp. The coils are arranged single pass and the capacity is 40,000 pounds of feed water per hour, heated from 100 degrees Fahr. to 230 degrees Fahr. with exhaust steam in heater shell at 10 pounds gage pressure. There are two Cochrane 5-foot diameter conical strainerless filters for oil removal service. The filtering material is magnetite ore.

Other Auxiliaries Described

For feed water treatment there are two coagulant chemical tanks. Two Griscom-Russell, multiscreen, feed water filters and grease extractors with a capacity of 40,000 pounds of condensate per hour at 130 degrees Fahr. have been installed. There are two Metropolitan double tube injectors with a capacity of 3100 gallons per hour.

Auxiliaries in connection with lubrication of the main engines include two Schutte-Koerting herringbone gear pump sets, each with double end motor and two pumps, having a capacity of 75 gallons per minute at 1150 revolutions per minute. One pump is to handle oil from the service tank to the engine bearing at 50 pounds per square inch pressure, and the other pump handles oil through cooler and strainer at 25 pounds per square inch pressure. Each pumping set is direct connected to a 7½ horsepower Westinghouse motor.

For centrifuging lubricating oil there is one motor driven super centrifuge with capacity of 85 gallons per hour, supplied by Sharples Specialty Co., Philadelphia. For lubricating oil cooling there is one cooler of Schutte-Koerting Co. make.

Fuel oil is carried in two cylindrical tanks each of 8000 gallons capacity. Reserve feed water is carried in four cylindrical tanks each of 2460 gallons capacity. Drinking water is carried in two cylindrical tanks each of 500 gallons capacity.

One Lonergan 10-inch chime whistle is installed on the stack.

St. Lawrence Closes Down for Winter

Navigation Opens Again at End of April

By "Lanyard"

EVERY year, from the end of November till the end of April, the mighty river St. Lawrence and gulf are closed to navigation on account of ice, and all Canadian seaborne trade is diverted to the maritime ports of Halifax N. S. and Saint John, N. B.

Some idea of the severity of the winter conditions responsible for this gigantic "freeze up," may be gained by a study of the accompanying map and the following facts.

The river is fed from the Great Lakes, and commences from the eastern end of Lake Ontario which is 1200 miles from Belle Isle. It is pure fresh water to a position 25 miles below the city of Quebec, and from Montreal to that point it averages over a mile in width.

The current runs constantly down river at a rate of three to five knots to about 70 miles below Montreal, and from there to the sea it is tidal, the tides setting back and forth at about the same rates.

From Montreal to Father Point is 297 miles, and the first 190 miles of this distance consists mostly of dredged channels averaging 1000 feet wide and thirty feet deep.

Channels Marked By Buoys

These channels are marked by 170 lighted buoys and 300 unlit buoys, all of which are removed when the ice begins to form, and re-laid when it clears about five months later. The fact that each of these buoys is moored with two anchors and two hundred feet of chain cable, gives some idea of the magnitude of the job.

In addition to the buoys, there are 70 pairs of range lights in operation, to aid navigation of the channels.

Range lights consist of two lighthouses set several hundred yards apart, the front one being 30 or 40 feet higher than the rear one. They are placed at the ends of narrow channels, so that ships coming up and keeping them in line, know that they are in the center of the channel. These and all other navigation lights are extinguished during the close season. The river ice begins to form towards the end of November, first freezing over the sheltered bays on the banks and gradually extending into the current. The wash of ships going up and down tends to thicken the ice by breaking the slabs and washing them on top of one another so that they freeze together.

A good deal of broken ice is carried down by the current from the upper reaches above Montreal, and a few cold, calm nights with the temperature hovering around zero soon has the river full of ice. Ships continue to pass up and down for a few days, breaking it up as they go, but the buoys are now being removed making navigation risky and finally it ceases completely, about Nov. 30. The freeze up is a little later in the gulf, where the harbors and bays usually freeze solid about the middle of December, and in the open water huge fields of ice several miles square drift about in close formation.

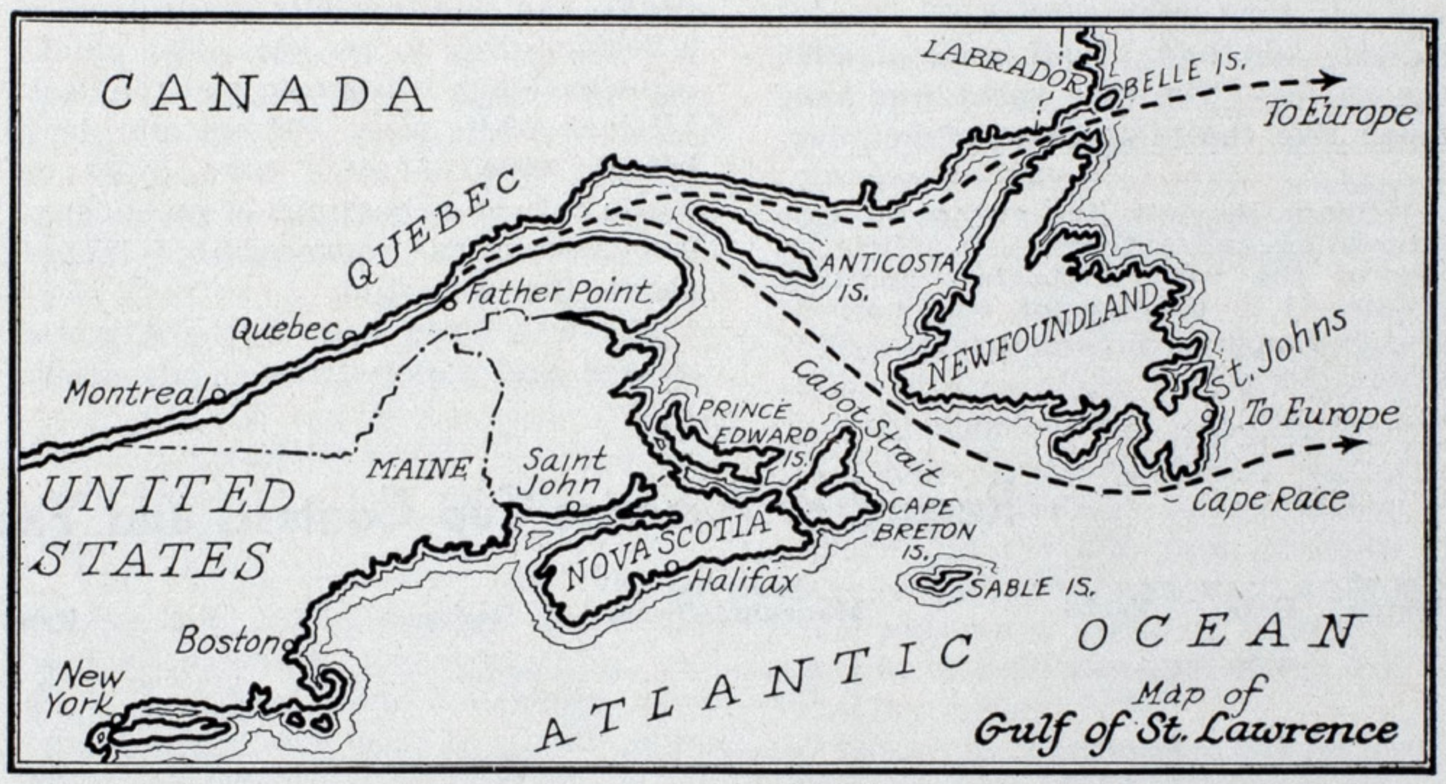
Cabot strait never freezes completely over, but between January and April it fills with drift ice and is sometimes completely blocked for three weeks at a time. Towards the middle of April it breaks up rapidly, and then the first "deep-water" ships of the season pass through the strait and reach Montreal about the end of the month. The master of the first ship to arrive is always presented with a gold-headed walking stick by the harbor authorities as a souvenir of the occasion.

Another Entrance to Gulf

The other entrance to the gulf is by Belle Isle straits, but these are blocked with ice till the middle of June. When this breaks up, icebergs commence to drift in from the ocean, and form a menace to shipping till about the middle of August. The Belle Isle route is nevertheless resorted to as soon as it is open, for not only is it less shrouded in fog than the Cape Race route, but it cuts 130 miles off the distance from Montreal to Great Britain.

As may be imagined, the great freeze up creates a tremendous amount of unemployment in all branches of the shipping industry such as dock workers, stevedores, tugboats, pilots and the vast fishing fleets in the gulf. A few find their way down to the maritime ports, but there they have their own labor problems, and intruders are not welcomed.

Montreal and Quebec get the ships from May to November; Halifax and Saint John get them from December to April. But the two latter ports are open all the year round, and consequently are never completely idle from a shipping standpoint.



Distances in Nautical Miles

River and Gulf of St. Lawrence
Transatlantic

Montreal to Quebec	139
Quebec to Father Point (Pilot and Quarantine station)	158
Father Point to Belle Isle	560
Father Point to Cape Race	672
Montreal to Bishop Rock (Scillies) via Belle Isle	2680
Montreal to Bishop Rock via Cape Race	2808
Bishop Rock to London (Gravesend)	380

THE AMERICA CUP,

British Challenge to Contest This Fall

By William Bennett

THE contest for the international yacht race which will be held in the fall of 1934 is of special interest to those who design, build and operate vessels of any type.

The history of the famous international yacht race of 1851 is too well known to be retold in detail; suffice to say that a great world's fair was held in London that year, and associated with this, an invitation was extended to America to send a yacht to England to compete in the yacht races. George Steers prepared plans for a new contending yacht, and the construction was placed in the hands of W. H. Brown, New York. When completed, the AMERICA was 101 feet, 9 inches in overall length; 90 feet, 3 inches on the waterline; 23 feet beam; and 11 feet, 6 inches draft. Her displacement was 147 tons. She carried 46 tons of ballast, and had a sail area of 6125 square feet. The new yacht was very much like the pilot boats of her day,

William Bennett, the author of this interesting and authoritative article on one of the world's greatest sporting events, is a member of the staff of Lloyd's Register of Shipping, located at Philadelphia.

Left to right—Enterprise, Resolute and Vanitie

heavy and substantially framed, with a decided drag to her keel. The planking was 3-inch white oak, and the deck 2½-inch white pine. Clamps and deck beams were of pitch pine, rails of white oak, and coamings of mahogany. The bottom was coppered to 6 inches above the waterline.

She was fitted out for the Atlantic voyage and sailed from Sandy Hook in June, 1851, arriving in Havre 21 days later.

On Aug. 22 of that year, the date of the race, there were 17 British yachts ranging from about 50 tons to 390 tons competing and the AMERICA of 170 tons. The AMERICA was the fifth largest yacht in tonnage to enter for the race, and was rigged as a two-masted schooner.

To make a long story short, the AMERICA won easily to the consternation of all concerned.

The America Cup

The cup won by the AMERICA became the property of the owners of the yacht, and for some years was incorrectly called the "Queen's cup." It never was a "Queen's cup," having been offered by the Royal Yacht Squadron to yachts of any nationality, without regard to rig or tonnage. The correct title is the "America's cup," the cup won by that yacht. It was kept by the owners until 1857 when they decided to offer it to the New York Yacht club as a perpetual challenge cup. This cup is still in possession of the New York Yacht club.

This deed, briefly stated, stipulated

Record of America Cup Contests and Yachts Engaged

No. of Match	Date	Yacht	Owner (or Managing Owner)	Designer	Rig.	Type	Length Overall ft.	Length Overall in.	Length Waterline ft.	Length Waterline in.	Breadth ft.	Breadth in.	Draft ft.	Draft in.
1	1870	Cambria	J. Ashbury	Ratsey	Schooner	K	113	0	100	0	21	1	11	5
		Magic	F. Osgood	Loper	Schooner	CB	84	0	79	0	20	9	6	3
2	1871	Livonia	J. Ashbury	Ratsey	Schooner	K	127	0	106	0	23	7	12	6
		Columbia	F. Osgood	Vandeusen	Schooner	CB	112	0	96	6	25	6	5	10
		Sappho	W. P. Douglas	Poillon	Schooner	K	138	0	121	0	27	0	12	10
3	1876	Countess of Dufferin	C. Gifford	Cuthbert	Schooner	CB	107	0	95	0	24	0	6	6
		Madeline	J. S. Dickerson	Kirby	Schooner	CB	106	0	91	0	24	0	7	3
4	1881	Atalanta	A. Cuthbert	Cuthbert	Sloop	CB	71	0	63	10	19	2	5	5
		Mischief	J. R. Buck	Smith	Sloop	CB	68	6	61	0	19	11	5	8
5	1885	Genesta	Sir R. Sutton	Webb	Cutter	K	95	6	81	0	15	0	13	6
		Puritan	C. J. Paine	Burgess	Cutter	KCB	94	0	80	8	22	7	8	8
6	1886	Galatea	Lt. W. Henn	Webb	Cutter	K	102	7	89	9	15	0	13	6
		Mayflower	C. J. Paine	Burgess	Cutter	KCB	99	4	85	3	23	5	10	3
7	1887	Thistle	J. Bell	Watson	Cutter	K	108	6	86	5	20	3	13	10
		Volunteer	C. J. Paine	Burgess	Cutter	KCB	106	3	85	11	23	2	10	0
8	1893	Valkyrie II	Lord Dunraven	Watson	Cutter	K	133	0	85	8	27	7	16	4
		Vigilant	C. O. Iselin	Herreshoff	Cutter	KCB	128	0	85	4	26	0	13	6
9	1895	Valkyrie III	Lord Dunraven	Watson	Cutter	K	125	0	89	9	25	2	20	0
		Defender	C. O. Iselin	Herreshoff	Cutter	K	124	0	88	6	23	3	19	6
10	1899	Shamrock I	Sir T. Lipton	Fife	Cutter	K	129	9	89	0	24	6	20	2
		Columbia	C. O. Iselin	Herreshoff	Cutter	K	132	0	90	0	24	2	19	10
11	1901	Shamrock II	Sir T. Lipton	Watson	Cutter	K	134	6	90	0	24	2	20	10
		Columbia	E. D. Morgan	Herreshoff	Cutter	K	132	0	90	0	24	2	19	10
12	1903	Shamrock III	Sir T. Lipton	Fife	Cutter	K	135	0	90	0	23	5	19	10
		Reliance	C. O. Iselin	Herreshoff	Cutter	K	143	0	89	6	25	10	19	7
13	1920	Shamrock IV	Sir T. Lipton	Nicholson	Sloop	KCB	110	5	75	0	22	3	14	0
		Resolute	R. W. Simmons	Herreshoff	Sloop	KCB	106	5	75	0	21	2	13	9
14	1930	Shamrock V	Sir T. Lipton	Nicholson	Sloop	KCB	120	0	81	0	19	7¼	14	8½
		Enterprise	W. W. Aldrich et al	Burgess & Morgan	Sloop	KCB	120	10	80	0	22	1¼	14	6

America Cup Defenders Built for 1930 Races

	Enterprise	Weetamoe	Yankee	Whirlwind
Owner	W. W. Aldrich et al	G. Nichols et al	J. S. Lawrence et al	Thorne Syndicate
Designer	Burgess & Morgan Ltd.	C. H. Crane	Paine Belknap & Skene	L. F. Herreshoff
Builder	Herreshoff Mfg. Co.	Herreshoff Mfg. Co.	G. Lawley & Son Corp.	G. Lawley & Son Corp.
Construction	Steel with bronze plating	Steel with bronze plating	Steel with bronze plating	Composite
Centreboard	C. B.	C. B.	No C. B.	No C. B.
Type	Sloop	Sloop	Sloop	Sloop
Length (o.a.)	120.82	125.8	125.95	130.0
Length (w.l.)	80.0	83.0	85.0	86.0
Breadth	22.1	20.25	22.5	21.6
Draft	14.5	15.0	15.0	15.5

that the cup was donated on condition that it would be preserved as a perpetual challenge cup for friendly competition. Any organized yacht club of a foreign country shall be entitled to the right of sailing a match for this cup, using a yacht or vessel propelled by sails only, and constructed in the country to which the challenging club belongs, against a yacht constructed in the country of the club holding the cup. The competing vessel, if of one mast, shall be not less than 65 feet nor more than 90 feet on the waterline, and if of more than one mast, the vessels shall not be less than 80 feet nor more than 115 feet waterline length.

How Challenges are Made

The challenging club shall give 10 month's notice in writing, naming the dates proposed for the races, no race to be sailed between Nov. 1 and May 1 Accompanying the 10 month's notice there must be sent the name of the owner, and a certificate of the name, rig, and general dimensions of the vessel. Competing yachts must proceed under sail, on their own bottoms, to the port where the contest is to take place. Centre-boards can be used.

The following were the conditions of the last contest. The winner of four races out of seven shall be entitled to the cup. All such races shall be on an ocean course, free from headlands. The first, third, fifth and seventh races to be 15 nautical miles to windward or leeward and return; and the second, fourth and sixth races, to be a triangular race of 10 nautical miles each side. One day shall intervene between the conclusion of one race and the starting of the next, Sundays excepted.

The cup remained unchallenged from 1851 to 1870 when the first contest was held between the MAGIC and the CAMBRIA. The accompanying table gives the particulars of the 14 contests, giving the contesting and defending yachts, owners, designers, builders and dimensions. In this table "K" represents keel yachts and "CB" centre-board yachts. For this information the writer is indebted to the New York Yacht club, being mostly taken from data given on models owned by this club.

Probably no one man has had more influence on the trend of yacht design over such an extended period than N. G. Herreshoff; five defenders: VIGILANT, DEFENDER, COLUMBIA, RELIANCE and RESOLUTE, all having been built to his designs. His strict attention to details, small and great, was very striking, and resulted in further cutting down in weights, particularly in the topsides. It is only fair to couple with Mr. Hereshoff's fame as a yacht designer, the name of William Gardner. His most famous yacht was the VANITIE which was almost chosen as cup defender in 1920. In fact many yachtsmen still maintain that the VANITIE is a faster all round yacht than the RESOLUTE.

It was welcome news in the fall of 1929, when, after a ten year's rest, Sir Thomas Lipton presented his fifth challenge to contest again for the cup.

Four Defenders Built

On the American side, four syndicates were formed to build one proposed defender yacht each. The first yacht to be contracted for, the ENTERPRISE, was designed by W. S. Burgess, son of the famous designer of the PURITAN, MAYFLOWER and VOLUNTEER. The ENTERPRISE was built by the Hereshoff Mfg. Co., Bristol, R. I. The other three proposed defenders were WEETAMOE, YANKEE and WHIRLWIND. One of the accompanying tables gives the general dimensions and features of the four yachts.

The masts average 165 feet in length, or approximately twice the waterline length, and everything possible has been done to reduce wind resistance above deck to a minimum. Sufficient information is given in the accompanying table to show the relative dimensions of the four defense yachts built in 1930, any one of which could be selected to defend the cup in 1934. In this connection it is well to remember that: (a) length gives speed, (b) beam gives power and stability under canvas, and (c) draft gives stability and lateral resistance. SHAMROCK V was a composite yacht with a centre-board. Her length overall was 119 feet, 10 inches; length on waterline, 81 feet, 1 inch; breadth, 19 feet, 7 inches and draft 14 feet, 8 inches.

Resolute, the defender in 1920

Prior to the 1930 contest, the construction was left entirely to the designer's fancy. In December, 1924, however, representations having been made to the New York Yacht club that suitable regulations should be made, the club appointed a committee to "investigate criticisms of possible loop-holes in the present American rule of measurement with a view of advising the club what changes if any should be made." The report of the committee was approved in January, 1928 in the form of an amendment to the racing rules, requiring that all new yachts be built in accordance with Lloyd's rules for the construction and classification of yachts. This amendment applied to both the challenger and proposed defenders, at the 1930 race, and will apply to the 1934 proposed race. This rule ensures a parity of strength and weight in both the challenging and defending yachts.

Since the construction of the yachts taking part in the last race, in 1930, a further amendment to the rules has been adopted, which incorporates new requirements regarding mast, boom, and running gear. It also stipulates that accommodations be provided under deck for sleeping and living quarters for the crew. This eliminates the use of under deck hand reel for the running gear. In other words the yachts must be equipped in a thoroughly up-to-date seagoing condition, in which the running gear is handled on deck and the crew can sleep aboard. This will make some quite important changes in the next cup challenger and defender and the effect on the sailing qualities will be watched with interest.

The 1934 Challenge

The new challenge has come from the Royal Yacht Squadron in behalf of T. O. M. Sopwith, owner of SHAMROCK V and VELSHEDA, and the challenge has been accepted by the New York Yacht club. Mr. Sopwith has

placed an order for a new cup challenger, class J yacht, to be designed and built by Charles Nicholson who was also the designer of both SHAMROCK IV and SHAMROCK V. The name of the new yacht will be ENDEAVOUR.

There are rumors of at least two new proposed cup defenders, one at least of which will be designed by W. S. Burgess who designed the ENTERPRISE and which was of bronze and steel construction.

The WEETAMOE has already been changed to be in accordance with the new racing rules, and can therefore be considered as a possible cup defender.

Nineteen thirty-four will therefore witness a revival of yachting interest on both sides of the Atlantic, and the progress of events will be followed with very keen interest.

Admiral Byrd's flag ship, the BEAR OF OAKLAND and his supply ship, the JACOB RUPPERT, are fitted with Sperry gyro-compasses. It is expected that this navigational aid will be of special value to the expedition in view of the tremendous magnetic variation in Antarctic waters and the necessity of constantly resorting to dead reckoning and astronomical observations in order to obtain their position.

Shipping Code Agreement Not Yet Reached

As this is written (Dec. 19) no definite action can be reported on the adoption of a shipping code. For the time being no agreement is evident. On Dec. 14 in an address before the Propeller club in New York, deputy administrator W. H. Davis made it clear in his remarks that as far as the government is concerned the shipping industry has had ample time in which to come to an agreement on a satisfactory general code and that if such agreement is not reached by Jan. 1, he would be prepared to make his own recommendations.

It will be recalled that the American Steamship Owners' association first presented a proposed code of fair competition on Sept. 25. After some discussion and numerous conferences this code was thoroughly revised and a new draft was submitted on Oct. 25. A public hearing was held on Nov. 9. Subsequent hearings were also held with various groups within the shipping industry, with the result that the American Steamship Owners' association submitted still another revised draft to Mr. Davis. In this draft an attempt has been made to meet the objections to previous proposals.

The latest draft, it is understood, follows the plan of Ira A. Campbell admiralty lawyer, to bring all American and foreign steamship companies operating from American ports under the proposed general code with provisions for setting up individual rules and regulations for each trading zone or branch of the industry.

Nothing definite has been done so far in coming to an agreement on the approval of the latest draft. In the meantime a number of proposed codes for separate branches of the industry which have been submitted must await action on the overall code.

The plan of the provisional general code as amended is to set up a main code authority for administration. This administrative body is to be comprised of members appointed by the President of the United States and by the various sections or groups within the industry such as the Atlantic Coast, the Pacific Coast, the Gulf, Great Lakes, and the interior.

It is not surprising with such a diversity of interests, including lines under foreign flags, that it is taking time to reach an agreement. Prog-

(*Continued on Page* 20)

New Winch Simplifies Cargo Handling

A NEW winch and derrick system for lifting, slewing and topping has been commercially developed in Great Britain by Clarke, Chapman & Co. Ltd., Gateshead-on-Tyne. It is known as the MacFarlane patent. This system considerably simplifies the handling of cargo and enables the combined operations of lifting, slewing, and topping to be in the hands of one man. Briefly this result is obtained by fitting the winch with three drums, giving complete and simultaneous control of all the motions of the derrick, as shown in the accompanying illustration.

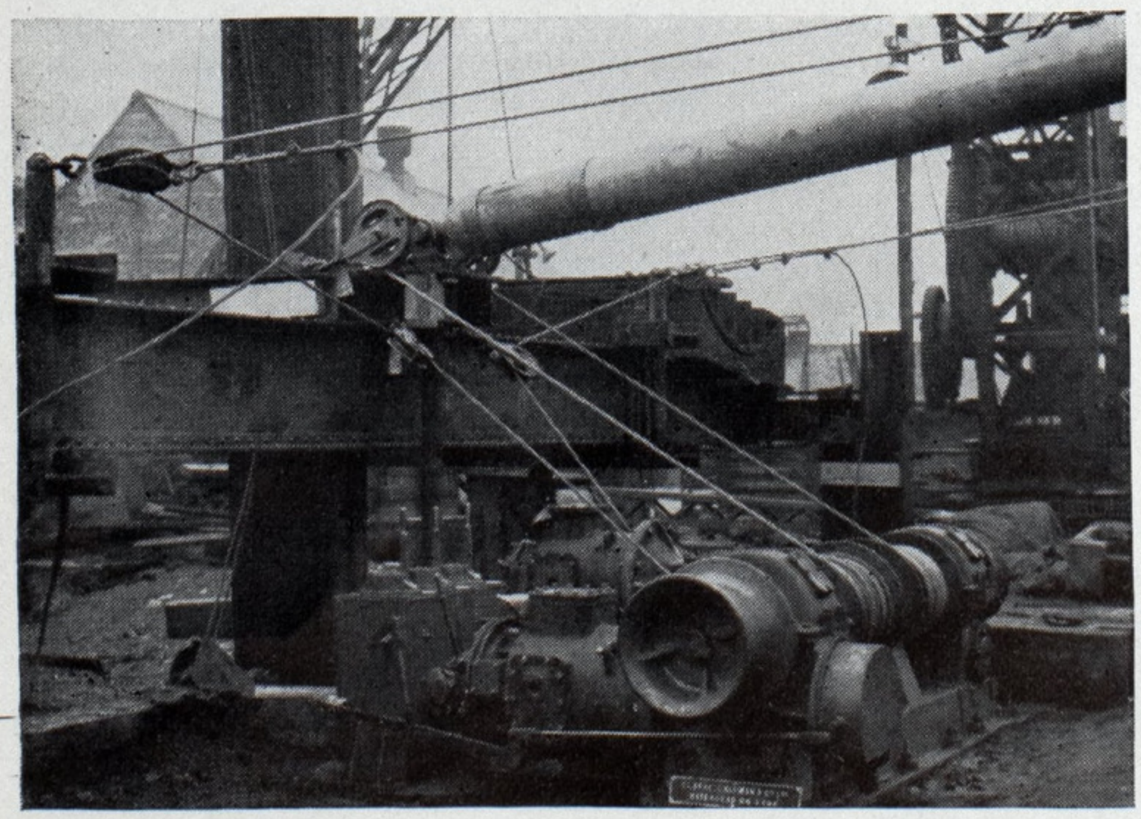
The winchman has all the controls within reach and can lower the hook, adjust the height of the derrick by the topping lifts to the actual position of the load, wind in, swing the derrick outboard or inboard, and adjust the height again before lowering to the required spot. There is no slack in the gear, whether the ship is on an even keel or in a heavy sea, and rolling has little effect on the derrick.

All of the advantages of a double winch and derricks are obtained without the attending disadvantages, such as bumping of load and rearrangement of gear necessary in loading on different sides of ships. In this connection it is interesting to note that the builder has recently concluded successful tests of one of these winches for a vessel under construction at a Scottish shipyard.

The winch is arranged to lift 3 tons at 100 feet per minute, 1½ tons at 200 feet per minute, and light hook at 400 feet per minute. The hoisting motor is 25 brake horsepower, the derricking motor is 20 brake horsepower, and the slewing motor is 12½ brake horsepower. All of the motions are independently actuated by means of worm gear.

Operation of the winch is by three vertical handles mounted on one combined master control box. A foot brake is provided for control of the hoisting motion and magnetic brakes are provided for the control of the hoisting, derricking, and slewing motions. A magnetic brake release handle is fitted on the hoisting motion.

By means of this winch a 7½-ton derrick may be operated with 3 to 1 purchase blocks. A 3-ton load can be carried on a single fall. Under the test conditions the maximum radius of the derrick was 30 feet, and the minimum radius 16 feet. The maximum reach of the derrick was 24 feet on each side of the centerline of the ship.



Mac Farlane patent lifting, slewing, topping winch and derrick system. All motions under control of one man. Developed by Clarke, Chapman & Co. Ltd., England

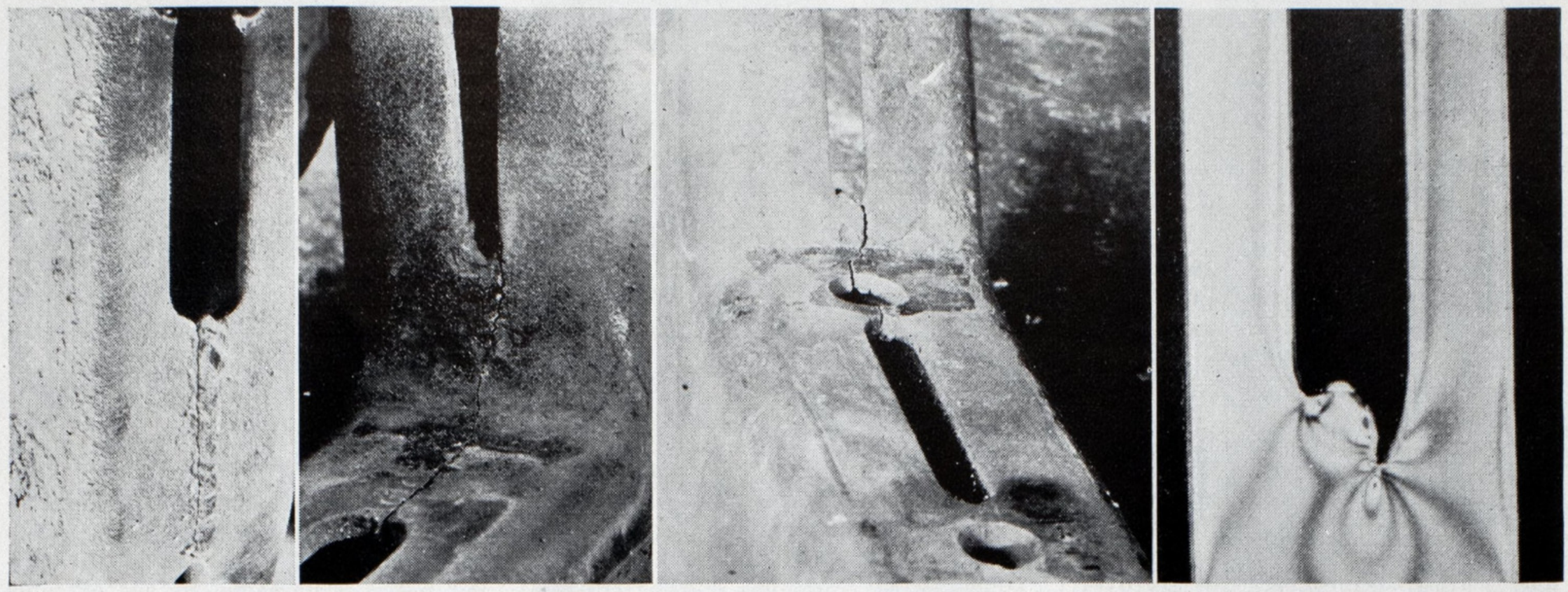


Fig. 1—A failure resulting from a slovenly job of welding. The fatigue crack centered about the stress concentration produced by a superfluous bit of weld metal which projected from an important boundary of the structure

DESIGNING WELDED STRUCTURES FOR HIGH EFFICIENCY OF JOINTS

Part I

BY EVERETT CHAPMAN
Lukenweld Inc.

THE science of structures is concerned with the economic distribution of elastic material to connect a load to its reactions over a reasonable length of time. Intimately associated with this broad subject are the various methods used to join the component members of the structure. While physical properties of elastic materials and engineering details of their distribution are important factors, this article is concerned primarily with the production of ideal welded joints.

Any structure built of pieces must necessarily act as a whole under its applied loads. Joint efficiencies, therefore, determine the action of the structure. As unit stresses are raised, high joint efficiencies become more and more important; and as the loading cycle becomes more and more frequent, homogeneous joints become imperative. Properly welded joints are more nearly homogeneous than any other type of connection between two pieces of material. Homogeneous joints are eminently desirable since they particularly affect the rigidity and fatigue performance of the structure.

Consider the two methods of supporting a load over a span, as exemplified in the sketches in Fig. 3. The usual truss and abutment arrangement is essentially a three-piece structure, connected by pin joints. The rigid frame bridge is a one-piece structure in which the transition from horizontal to vertical members is distinguished by the fact that this apparent joint can transmit bending moments. In the one-piece rigid frame bridge, the bending mo-

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PRECAUTIONS which must be observed in designing correct and efficient joints in welded steel structures were discussed at length in a paper presented at the fifty-fourth annual meeting of the American Society of Mechanical Engineers in New York, Dec. 5-7. This paper constitutes an important contribution to welding knowledge and because of its wide interest will be published in full in MARINE REVIEW in two parts. Part I, appearing herewith, deals with joint failures and causes therefor as explained by photoelastic studies; Part II, to appear in the next issue, will suggest corrective measures through drafting room practice and heat treatment. Two articles by the same author in the November and December MARINE REVIEW discussed similar problems as applied specifically to the welding of rolled steel diesel engine structures. The author is vice president in charge of engineering, Lukenweld Inc., division of Lukens Steel Co., Coatesville, Pa.

FIG. 2 — The transition zone between weld metal and 0.40 per cent carbon base metal. The large grain size indicates damage from the high temperature of the arc

ments are distributed uniformly over the entire structure. Vertical and horizontal members interact to redistribute the bending moments. When, as in this case, adjacent members interact through a rigid junction, the redistribution of bending moments may effect an economy of material running as high as 30 per cent. Considered broadly, the type of joint at the knee of the one-piece rigid frame bridge, shown in the lower part of Fig. 3, is the joint inherent in a properly welded design.

Two plates can be welded together so that the joints as such vanish. A homogeneous joint, or transition between two pieces of material, is a joint whose elastic behavior cannot be distinguished from that of the same configuration cut from a single piece of material. In the unattainable ideal, the maximum stress would have the same value as the average stress. It is thus indicated that a definite though intangible advantage continually permeates the welded steel structure. Since the joints can be made so that the continuity of rigidity is preserved perfectly in the transition from one member to another, the structure will act as an elastic entity. The fact that this ideal can be approached closely in welded joints has two implications for the structural designer.

Inertia Moment Is Lower

First, as has been mentioned, is the fact that continuity can be taken into consideration in the design of gross structures such as bridges and buildings in which the moment of inertia of each member is much less than the corresponding constant for the whole structure. Welded design is eminently adapted to the curvilinear structures which result when continuity of elastic action is considered in the design. The second implication is that the behavior of the properly welded structure, under impact and fatigue load, is similar to that of a jointless structure as far as service life is concerned. The entire structure's resistance to severe loading conditions represents the thoroughly consolidated resistance of its components.

A homogeneous joint has two characteristics. First, the material comprising the joint must have uniform

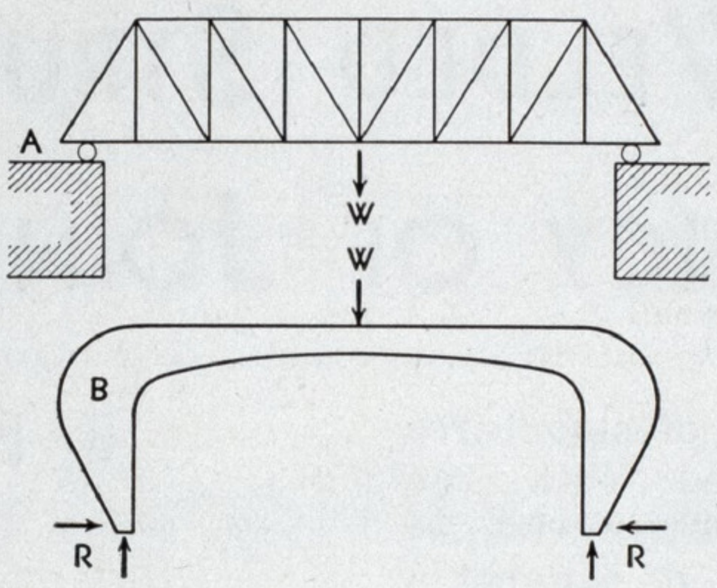


Fig. 3—Sketch indicating two methods of supporting a load over a span. Above is a three-piece truss and abutment arrangement; below is a one-piece rigid frame

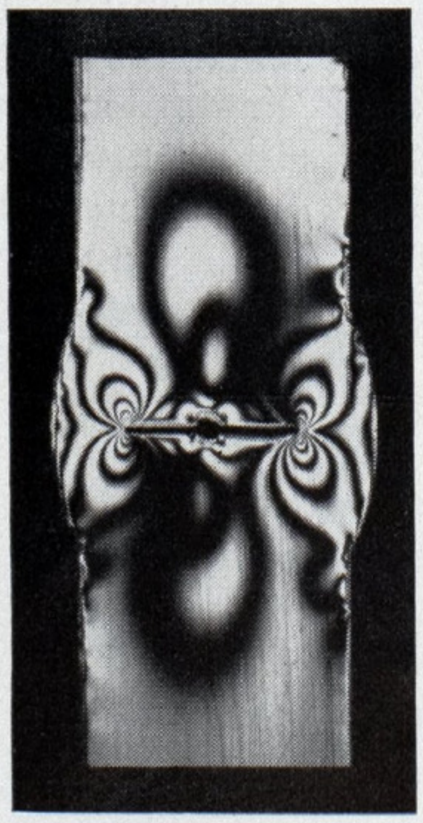
physical properties from point to point; it must not have been damaged in any respect by the fabricating process. Second, the distribution of stress throughout the joint, from point to point, should be of maximum uniformity. A perfect distribution of stress over the joint is also an unattainable ideal since the joint at its best represents an abrupt change in contour.

With a homogeneous joint of the desired characteristics, the two members are joined in such a manner that neither the elastic action nor the plastic action of the composite is distinguishable from the action of a single piece. Again, the joint has vanished.

Three Controlling Factors

Three factors control the two desired characteristics of the homogeneous welded joint. First, the parent metal is damaged by the extreme heat of the welding operation. Fig. 2 shows the transition zone between weld metal and 0.40 per cent carbon base metal. The large grain size is indicative of the high temperature to which the parent metal has been raised by the heat of the arc. The metallic heat path to the body of cold parent metal forms an excellent thermal sink and the resulting rapid heat flow away from the weld thoroughly quenches the heated zones around the weld. The net result is a zone of highly overheated and quenched material adjacent to the weld. The severity of damage in this zone is a particular function of the carbon content of the parent metal, or more generally, a function of the air-hardening ability of the steel.

This damaged zone, whatever its extent, represents a discontinuity in physical properties, since the large, overheated grain is decidedly weak in resistance to fatigue and impact. In addition, the hardened microconstituents, due to the quenching action, are very strong, but they lack the ductility necessary to compensate for the thermal stresses to which the piece



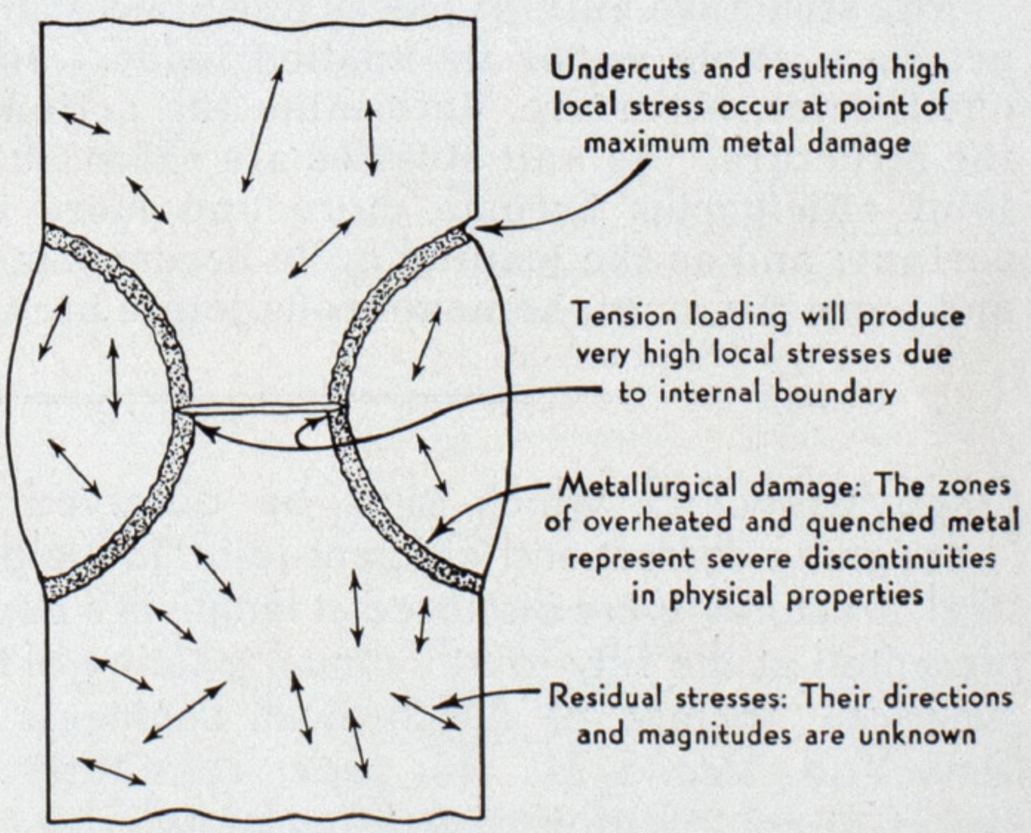


Fig. 4 (Left)—Photoelastic study of an improperly designed welded butt joint. The two welds, deposited from each side, do not meet at the center. Fig. 5 (Right)—Graphical representation of an improperly executed welded joint—physical properties are not uniform from point to point

is subjected in the welding operation. The joint may crack through the damaged zones during fabrication and this phenomenon may be carried over into the service behavior of the structure if the damage is not corrected.

Second of the factors controlling the production of homogeneous welded joints is the design of the joint itself. It is the rule rather than the exception that stress concentrations of a very severe nature may exist in the joint. Fig. 4 shows the heterogeneous stress condition which exists in an improperly designed welded joint. This photoelastic study represents a loaded butt joint between two pieces of metal of equal thickness.

Stress Variations Too High

The two welds, deposited from each side, did not meet at the center. The unfused portion forms an internal boundary which produces an extreme variation in stress over the joint. At the end of this crack, the stresses are extremely high. In addition, intermediate high stresses exist at the ends of the reinforcements which are usually, and vainly, applied in order to strengthen this type of joint. Such reinforcements are effective only under static load; under impact or fatigue loads, the changes in contour at the ends of the reinforcements introduce additional stress maximums.

Third of the factors influencing the production of homogeneous welded joints is the element of residual stress introduced in the structure through contraction of cooling weld metal. Little is known of the direction or magnitude of these thermal stresses. There is direct evidence, however, that the residual stresses may in many cases exceed the yield point of low-carbon steel.

When a known service load is superimposed on a structure which is already loaded by residual stresses in an indeterminate manner, the elastic conditions which exist from point to point are highly chaotic. The structure may be so highly preloaded that its permissible load in service is only a small fraction of the designed load. Structures, the natural shape of which is such that the stresses are self-locking, often fail through the partially completed welds during fabrication, due to some shop handling condition —such as hammering or dropping— which applies even a small shock load to the structure. This behavior is not due to "brittle welds," as has been commonly supposed.

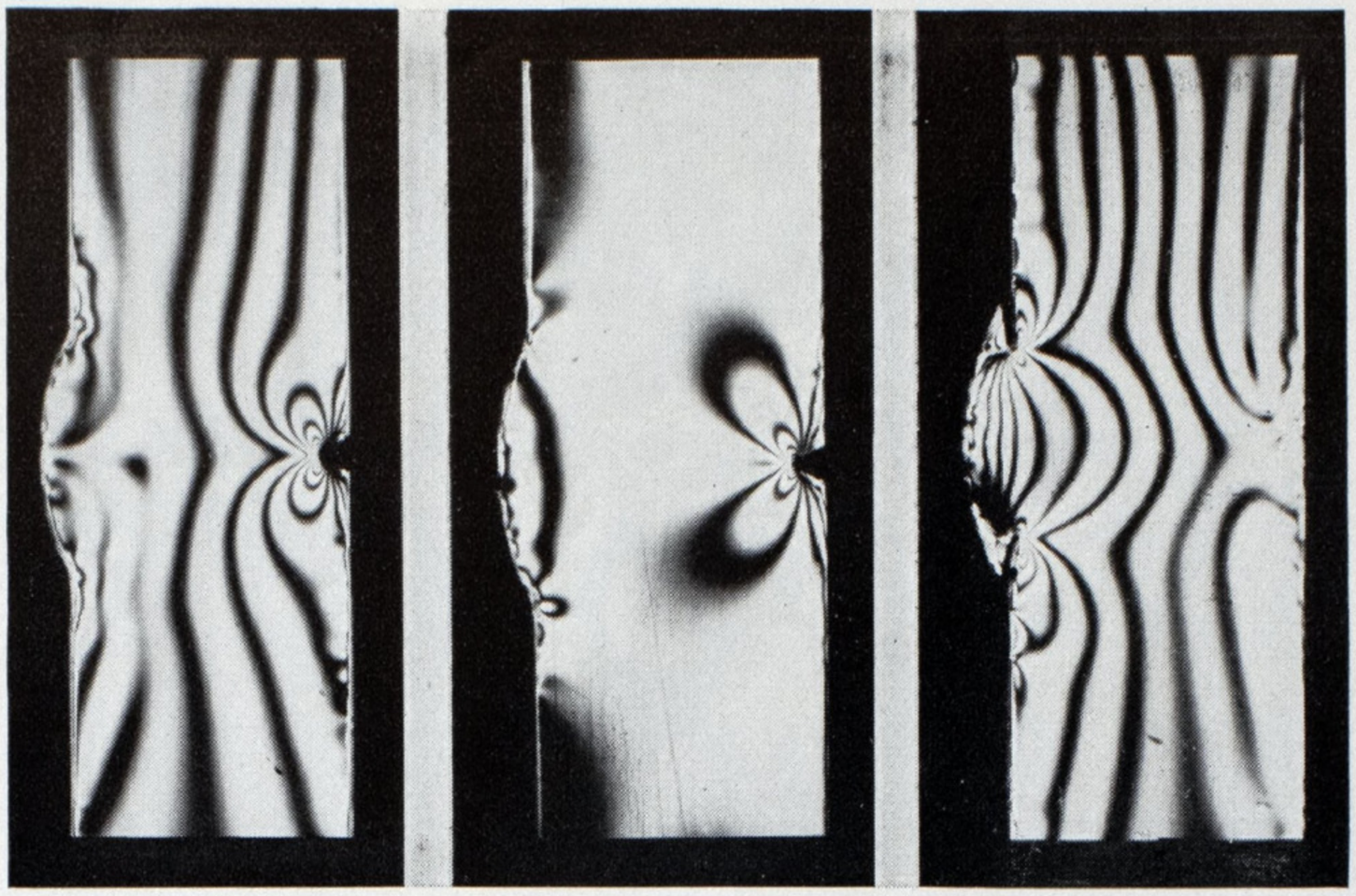


Fig. 7 (Left and center)—Stress distribution usually found in welds made from one side of a plate. Penetration of weld metal cannot be completely controlled from one side. Fig. 8 (Right)—The overlap, in which weld metal runs onto the plate surface and solidifies without fusing, is another common defect

Warping Often Occurs

In addition to the elastic chaos that residual strains may produce in a welded structure, severe warping will occur when the strains are relieved, either in the machining operation or by a gradual creep over a period of time. A battery of machines, in which proper functioning depended upon maintained accurate alignment, was rendered progressively ineffective as the machine housings gradually crept out of shape. In two years, the machines were useless.

Fig. 5 represents graphically the abortion which can result from the improper execution of a welded joint. This joint is far from homogeneous. Physical properties are not uniform from point to point, since there are zones of badly damaged metal. The stress values throughout the joint when loaded vary tremendously from point to point, because, in addition to the stress concentrations which exist at internal and external boundary discontinuities, the unknown residual stresses add to the concentrated load stresses, and thus produce utter chaos.

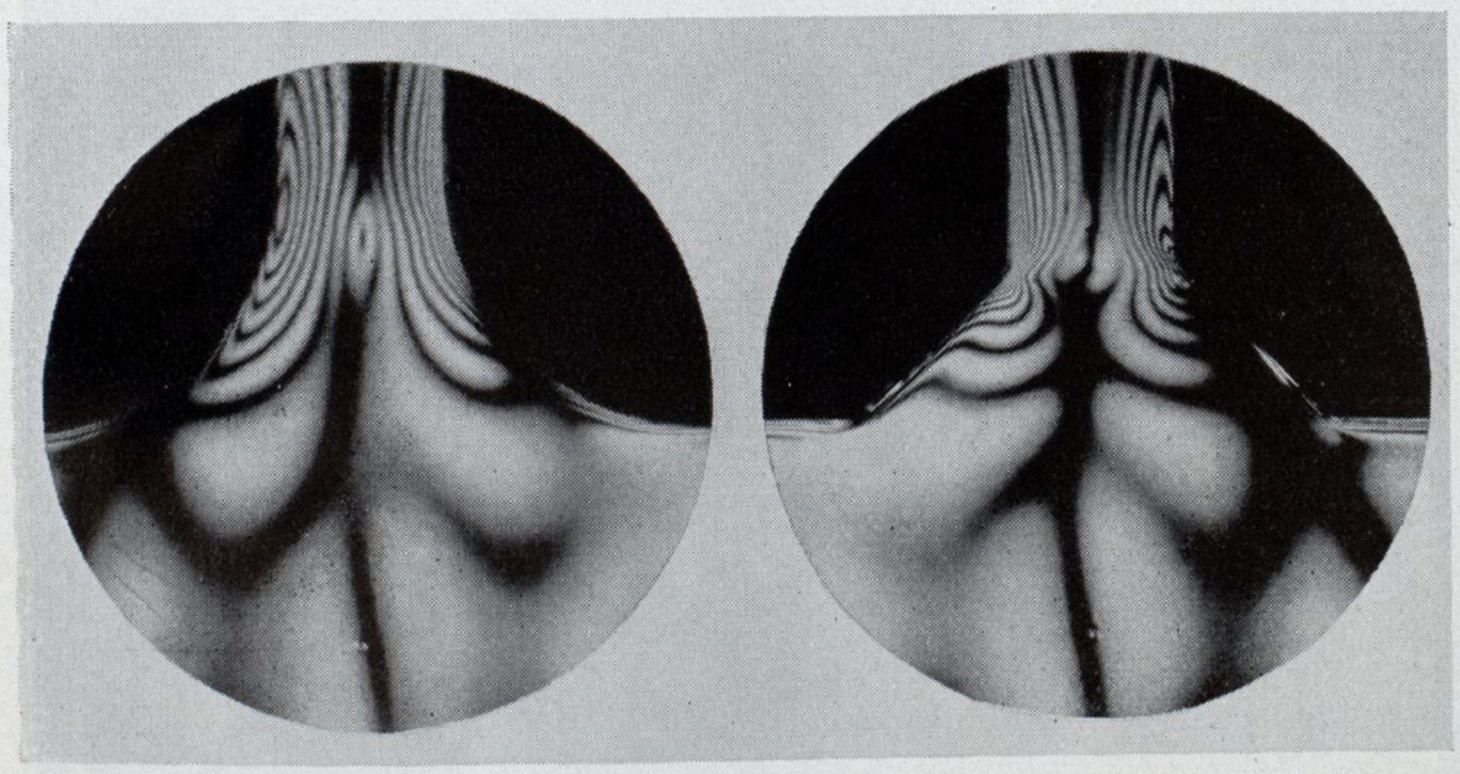


Fig. 6—Contrasting conditions around a fillet weld with concave contour and another with triangular cross section. The triangular throat weld has a low average stress but a high maximum stress because of abrupt change in contour. The concave throat weld has high average stress but low maximum stress and better distribution

Parent Metal Damaged

Note the points of extreme stress concentration at the ends of the internal boundary, the points of lesser stress concentration at the ends of the reinforcement and around the undercut. Zones of badly overheated and quenched parent metal surround the weld metal. The situation is aggravated further by the co-existence of damaged material and high stress at the same place. The undercut localizes a high stress at a point where the parent material is in its poorest condition.

Whenever a welded joint, whatever its type, functions in a nonhomogeneous manner, one or more of three destructive factors are operating—sharp changes in contour, damaged material, and preloading. For example,

Fig. 9—Stress distribution resulting from an unwelded internal boundary on brittle weld metal (left) and ductile weld metal (right). The ripping action starts from the inside and reduces the apparent strength of the joint materially

Fig. 7 represents stress distribution usually found in welds made from one side of a plate. Such welds frequently introduce ragged contours, since the form of penetration of the weld metal cannot be controlled completely from one side. Where the design of the structure is such that welding from both sides is impractical, the use of backing-up strips permits the production of a compromise contour which is at least predictable.

Fig. 8 illustrates the stress distribution around another common type of defect, overlap, which often occurs at the hands of an inexperienced welder. It is caused by running over of the molten weld metal on to the surface of the plate, where it merely solidifies instead of fusing with the parent metal.

Weld Contour Important

Fig. 6 emphasizes another of the many forms of vicious stress distribution that may creep into a structure. It contrasts the stress conditions around a fillet weld having a concave contour with that around a fillet weld having a triangular cross-section. The triangular throat weld, while having a lower average stress due to its greater throat dimension, has higher maximum stresses because of the abrupt change in contour that it represents. The concave throat weld has a smaller throat area and therefore possesses a higher average stress, but its points of maximum stress are considerably lower than those in the triangular throat weld.

There are many instances permeating the entire machine design picture in which the proper procedure to rectify a succession of fatigue failures is to remove metal rather than make addition to the existing section. The effect of removing metal properly is to raise the average stress a few per cent, while making a reduction of several hundred per cent in the values of the maximum stress. The concave throated weld fillet is a case in point. The concave throat contour provides the most uniform distribution of stress and is the closest approach to the ideal that can be obtained in practice. The conventional term, throat dimension, has no meaning in this case since the technique involved in removing the internal boundary consisted of welding completely through the joint.

Fig. 1 shows a failure resulting from a slovenly job of welding. The fatigue crack centered about the stress concentration produced by an extraneous bit of weld metal carelessly left by the welder to project from an important boundary of the structure. It should be noted that the doubly aggravated condition which exists when a point of high stress coincides specifically with a zone of badly damaged parent material is the rule rather than the exception in all of the joints illustrated.

Ductility Gives Higher Strength

Fig. 9 contrasts the action of the poisonous stress distribution resulting from an unwelded internal boundary on a ductile and on a brittle weld metal. The ripping action which starts from the inside reduces the apparent strength of this joint materially. The brittle weld metal shows a fracture without an attendent change of shape while the ductile material, through a plastic deformation at the points of high stress, enables the structure to change its shape to a degree which materially raises the actual strength of the joint.

Fig. 10 illustrates the same combination of effects occurring in a fillet welded joint. Compare the actual behavior of the joint under a tensile load with the stress distribution as shown in the photoelastic study. The ductility of the weld metal in this case allowed a sufficient correction of contour at the points of maximum stress so that the failure actually occurred some distance away from the joint. It should be emphasized that the mechanism of ductility is not available for the correction of structural discrepancies in cases where the load is of a repeated nature.

(To be concluded)

Effective Dec. 1, the Standard Oil Co. of New Jersey advanced the price of bunker oil by 10 cents a barrel. The new prices are $1.20 on the Atlantic coast; $1.05 at Gulf and West Indies ports, and $1.25 at Panama canal ports. No information was received concerning diesel fuel oil prices though recent quotations show an advance.

Fig. 10—An improperly made fillet welded joint. Actual behavior of the joint in tension is shown at the right. Ductility of the weld metal caused the failure to occur at some distance from the joint. Photoelastic study of such a joint is shown at the right

UPKEEP OF A LINER,

Care of Hull, Superstructure and Decks

BY J. G. BISSET

OF ALL the structures built by man, a ship is the most subject to the ravages of wear and tear, and wind and weather.

Take the case of a modern liner leaving the port of New York for a winter voyage—spick and span with paint and polish, and looking like a yacht. She encounters bad weather during which she rolls and pitches, strains and labors for five or six days. Rust spots break out in a thousand different places; funnel smoke and fumes are sucked inboard on the lee side blackening decks and paintwork; her funnels are encrusted with salt from the driving spray; her canvas gear is slack and flapping about like a lot of old rags, and she arrives in port resembling nothing better than a rusty old tramp.

No sooner is she in berth than the crew and shore gang get busy with paint, hoses, suji-muji (seaman's name for a mixture of washing soda and water), scrubbers, holystones, sand and canvas, brass polish and sundry other cleaning gear, and in a couple of days she is again spick and span, and ready to go through the same drubbing on the return voyage.

And so it goes on throughout the year, with probably a few fine weather voyages during the summer.

Care in Upkeep Important

Now this constant endeavor to keep ships clean and in good condition is a very important matter to the shipowner, not only to check undue deterioration but because smart looking ships are a good advertisement in themselves. To maintain a fleet of ships is a problem that demands close co-operation between the superintendents who control the activities of the shore gangs, and the officers whose duty it is to keep the ships clean throughout the voyage, for only in this way can expenses be kept down to a reasonable figure so necessary in ship operation today.

For the purposes of this article, it will be convenient to consider a fairly general type of ship, and inferences may be drawn from it to suit larger or smaller types as may be desired. We will take a vessel of 15,000 tons gross, built to carry 1000 passengers, 240 crew, 8000 tons cargo, with a speed of 16 knots on a consumption of 100 tons of oil fuel per day. She belongs to a line of long standing and is engaged on a regular trade between United States and Great Britain, each complete voyage taking about 28 days, which includes 4 days in port at each end. She averages 12 voyages a year and has an annual layup of 4 weeks.

About three months before the layup, the chief officer is required to hand in lists of repairs and other work which is needed, in order to enable the marine superintendent and his staff to prepare an estimate for submission to the management.

This estimate is invariably too high, and the manager having cut it down to what he considers a fair figure, the superintendent is faced with the problem of cutting out the less important items—a difficult business when everything is crying aloud for attention.

A Complete Overhauling

During the layup, and subject to the above mentioned limitations, repair jobs that have accumulated throughout the year, without interfering with the safe or efficient running of the ship, are taken in hand. The ship is placed in drydock, and all underwater repairs are carried out. The bottom is scrubbed as the water is slowly lowered in the dock, and this should be given careful attention if the subsequent painting is to be efficacious. Chipping and scaling must be done where required and coated with red lead, after which a coat of anti-corrosive paint followed by a coat of anti-fouling are applied to the whole under water portion. In the vicinity of the propellers, a third protective coating of some particular preparation such as Apexior is applied as a general precaution against pitting. The cables are ranged in the bottom of the dock, and the shackle pins driven out for survey of a representative of Lloyds or American Bureau of Shipping depending on the vessel's classification. The cable lockers are then scaled and painted.

In the wet dock, all boats are lowered into the water for annual survey, and the small gear put into good order. Cargo gear is tested in accordance with the provisions of the factory act, if the vessel is British or the steamboat inspection if American. The ship is fumigated, special attention being paid to crew's quarters and store room. Decks are caulked where required, holds cleaned out and hatches put in good shape.

Chipping and scaling in bad places round the decks is taken in hand, and the whole ship gets a coat of paint. Deck houses are washed, rough places smoothed over with painters' cement, and given a flatting coat followed by a coat of good enamel.

In the meantime similar activity has prevailed in the engine room and passenger quarters, so that when the ship puts to sea after a layup, she is in first class condition, and she serves as an inducement to the officers to keep her that way.

Before sailing the superintendent will discuss with the officers the work that has been done and that which has been left undone, and arrange if possible to have it completed while the ship is in commission. Once the ship is running, no shore gang labor is employed in outside ports, and it is reduced to a minimum in the home port. During the four days in the home port the great majority of the crew are paid off and go to their homes, so that a few shore gangs are necessary for tending moorings, taking in stores, touching up overside, washing decks and paint-work, and generally having the ship clean and smart for the embarkation of passengers.

Work Done at Sea

At sea, the crew work in two watches, and little more can be done than keep the ship clean and carry out general routine. If passengers are on board, all decks are washed down every night, care being taken to avoid disturbing passengers by the banging of brooms or hoses on the deck or undue talking or shouting on the part of the men engaged. Holystoning is only undertaken on those parts of the decks that are not immediately over passengers' cabins. A certain amount of painting can be carried out at sea, providing it is well out of reach of the nimblest passengers, and not offensive on account of smell in confined spaces. Such items as boats and davits, derricks, and general overhead work are generally undertaken at sea.

In bad weather when work is impossible on deck, scaling and paint-

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The author, Commander J. G. Bisset, R. D. R. N. R., is master of the Cunard liner R. M. S. ASCANIA and was formerly staff captain of the R. M. S. AQUITANIA.

ing may be carried out in holds, store rooms and in crew's quarters.

On arrival at the "away" port, the crew cease watches and go onto day work, with the boatswain in charge, under the supervision of the first officer. The work must be carefully planned to get the best results, for there are many things to contend with, such as cargo gear littering the decks, winches working, barges alongside, and visitors meandering about. The weather also often upsets things, and a knowledge of meteorological conditions is useful. Nothing is more annoying than to put on a nice coat of white paint and then have a sudden shift of wind smother it with coal or grain dust, or again in the winter time, for the wind to shift round to the north and send the mercury tumbling down so that the paint freezes and does not dry.

Besides painting, there are numerous other jobs such as stoning of decks, scrubbing teak wood rails and doors, washing paint-work, overhauling boats and other life saving apparatus, scaling and chipping iron rust both inboard and overside.

The funnels are painted every voyage and the masts every other voyage. In the summer, opportunity is taken to give all decks their annual coat of varnish. The decks are thoroughly stoned first, and when they are bone dry, the varnish is applied liberally and allowed to sink in. This hardens up the decks and increases their life tremendously.

Corrosion, a Constant Menace

Corrosion is a condition which must be constantly guarded against, especially in the more exposed parts of the superstructure. No amount of slapping on paint will arrest it, and the only method is to clean off the iron thoroughly with chipping hammers and wire brushes, and apply several coats of red lead. Overside, the worst corrosion takes place in the region of the waterline, that is, between wind and water. This is caused by the constant wetting and drying of the plates; the rubbing alongside of barges, or scraping along wharves and piers, thereby breaking the paint surface, and acids and oils in dock water eating into the steel. There is nothing to be done about it except protect the sides as much as possible with fenders, and keep on scaling and red-leading the worst places at every opportunity.

In the course of time, funnels get very thick with paint, and it commences to break off in large flakes. This is particularly noticeable in the cold weather. In port when fires are drawn, the funnels get cold, and contract. When the fires are lighted for leaving port, the funnels expand and crack the paint, and when the ship gets out in a breeze, great slabs break away and hurtling down, become a source of danger to passengers and others on the upper deck. When funnels reach this stage, it is time to scale them completely.

In many instances, ships begin to look old before their time, owing to the super-abundance of paint that has been plastered onto them by careless and unthinking officers.

It is much better when paint is thick enough to stand it, to wash paintwork with a solution of weak soda water, using a little bath brick to remove rust stains. Soda should never be used on enamel paint as it will remove the gloss. Fresh water. a good soap and soft cloths or sponges should be used instead.

Lifebuoys should rarely be painted. The writer has seen a lifebuoy sink when thrown over the side, owing to the weight of paint accumulated on it over a number of years.

Scaling and Painting of Holds

The scaling and painting of holds is very often neglected, for it is a long job and the results are not very spectacular. But once rust begins to form, it forms quickly and the job will take twice as long, so it is better to tackle them systematically and paint a certain portion each year.

Clean, well kept holds appeal to cargo shippers, and they and their representatives take notice and talk of these matters.

Paint now-a-days is supplied all ready mixed, and only requires thorough stirring in the drums before being used. The ship under discussion uses roughly 1000 gallons of paint of various colors in the course of a year, in all departments, not reckoning that applied by the shore gang in the home port.

In concluding this article on upkeep, it may be in order to consider the moral effect on both passengers and crew, of finding themselves in a clean, smart and well found vessel.

There is an old saying in the British navy, "A clean ship is a smart ship; a smart ship is a happy ship, and a happy ship is an efficient ship." This also holds true in the merchant service, and in a ship where "shipshape and Bristol fashion" is the order of the day, the crew lose their slovenly habits and take a corresponding pride in themselves and the ship. This promotes happiness, and smartness. Where the officers take a personal interest in the work and in the crew, and see to it that their quarters are kept clean, their food properly served, that orders are given in a seaman-like manner, that the work is sensibly planned and carried out, and that "slackers" will not be tolerated, there we arrive at good results and efficiency, and the men will take a pride in doing their best.

This attitude on the part of the crew is very apparent to passengers, who, although they may know little about ships, are well acquainted with human nature, and can judge easily from the members of the crew with whom they come in contact, just what manner of ship they are in.

To be in a smart ship, and a happy ship, and a well disciplined, efficient ship, gives passengers a sense of security and comfort, and what is even more important to the shipowner, a feeling that they will continue to travel by the line.

Shipping Code Agreement

(*Continued from Page* 14)

ress, however, is being made as the discussions continue, and a definite agreement will probably be reached, if not by the first of the year, shortly thereafter.

Though foreign lines are naturally inclined to consider the proposed provisions very carefully as far as their interests are affected, there is no disposition on their part to hinder the acceptance of a code, it being understood, of course, that its provision would in no way affect the actual operation of their ships afloat.

Lord Essendon at the annual meeting of the Prince Line in London said in connection with a code for shipping: ". . . certain plans that are now being evolved have great possibilities for good. I refer particularly to their (United States) plan for regulating industry, especially to the adoption of codes of fair competition in connection with the national recovery act.

"Such a code, if framed on the principle of establishing order where chaos has previously existed, will at least benefit shipping to the extent of eliminating a great many of the evil conditions which have crept into the industry during a period of excessive competition, and will, it is hoped, give the industry some compensating advantages to offset the difficulties under which we have been laboring for a long time past, and which have recently been added to by increased costs and diminishing trade."

General Electric Gains

Orders received by the General Electric Co. for the third quarter of 1933 amounted to $43,733,499, compared with $35,539,858 for the second quarter of this year and with $25,665,402 for the third quarter of 1932, an increase over last year of 70 per cent.

For the nine months ended Sept. 30, orders received this year amounted to $104,785,001, compared with $94,374,114 for the first nine months of 1932, an increase of 11 per cent.

Former Shipyard Executive, Frederick P. Palen Dies

The sudden death in New York, Dec. 2, of Frederick P. Palen, formerly vice president of the Newport New Shipbuilding & Dry Dock Co., and associated with that company for 35 years until his resignation in January, 1930, came as shock to his many friends in shipbuilding and shipping circles. He died of pneumonia at Rockefeller Reearch hospital after an illness of three days. He was 61 years old. Funeral services were held Dec. 4 at the Church of the Heavenly Rest, Fifth avenue and Ninetieth street. Burial was at Richmond, Va. At the time of his death Mr. Palen was president of the *Marine Journal*, New York.

His association with the Newport News Shipbuilding & Dry Dock Co. goes back to within a few years of that company's organization, in 1887. During his service with this company he became prominent not only in its affairs but in many of the constructive efforts of the shipbuilding industry as a whole.

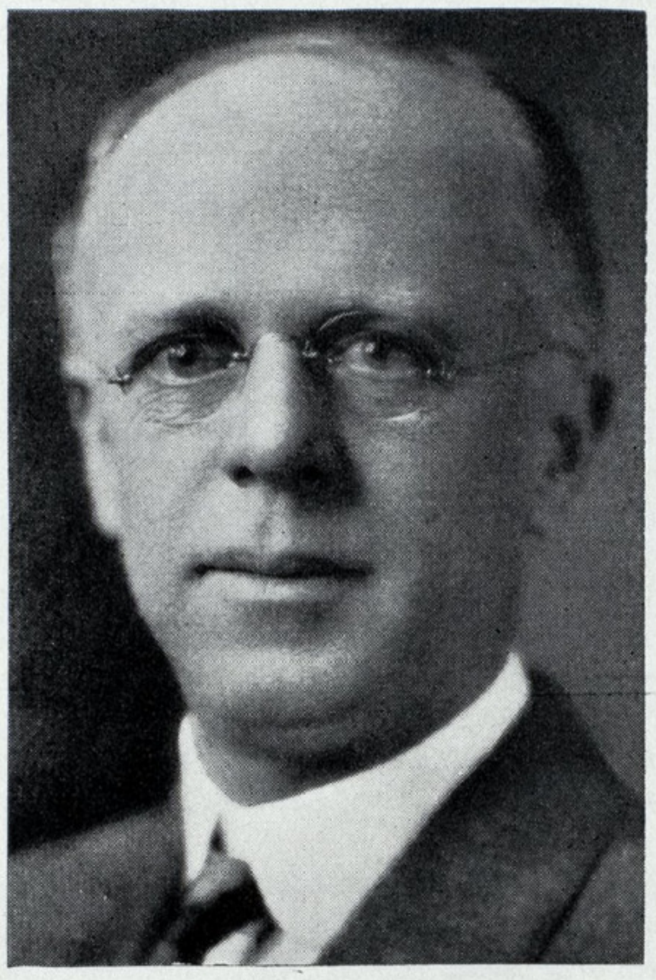
Resignation as Vice President

His resignation as vice president of the Newport News Shipbuilding & Dry Dock Co., a position he had held for 14 years, came about a few months after the senate investigation in 1929 of the activities of W. B. Shearer at the Geneva Arms conference in 1927. At the investigation, Mr. Palen frankly assumed responsibility for having employed Mr. Shearer to represent three of the leading shipbuilding companies at the arms conference as observer. Mr. Palen explained to the committee that he had been impressed by Mr. Shearer's knowledge of naval and merchant marine affairs and had suggested he be sent to Geneva as an observer, for his own company, the Bethlehem Shipbuilding Corp., and the New York Shipbuilding Co. in order to keep these companies authoritatively informed of the trends of the conference. He emphatically denied that his instructions to Mr. Shearer went beyond the entirely legitimate purpose of observation to keep the shipyards informed at first hand of the progress of the conference.

Later Mr. Palen became associated with the United States Lines in the preparation of plans and specifications for a large shipbuilding program including two superliners. The project was finally dropped due to the business depression. He then became president of the Primrose Publishing Corp., New York, publisher of the *Marine Journal.*

Mr. Palen worked effectively in advancing the position of the American merchant marine, and was a strong supporter of the legislation which finally resulted in the merchant marine act of 1928, allowing mail pay for essential American shipping services. He was credited with a number of engineering inventions in connection with modern shipbuilding. While he believed in government protection and aid to American shipping to offset the recognized differentials in cost of construction and operation as compared with foreign lines, he did not believe in government operation or construction of vessels and felt that private initiative must be depended upon to develop the country's merchant marine and as a safeguard for the nation in time of war.

Born in Jenningsville, Pa., April 20, 1872, a direct descendent of Gylbert Palen who came to America from Holland in 1680, Mr. Palen was graduated from Cornell university in me-



chanical engineering in 1894. He then began his career at the Newport News Shipbuilding & Dry Dock Co. as a draftsman, rising in five years to become chief draftsman in charge of 150 men and shortly afterward assistant plant engineer under C. F. Bailey. In 1912 he was made assistant general manager of the shipyard and three years later vice president, with offices in New York in charge of the financial and contracting departments.

He was an organizer as well as an engineer and was one of the charter members and long one of the executive officers of the old Atlantic Coast Shipbuilding association, Philadelphia. Later he was instrumental in the formation of the National Council of American Shipbuilders, New York, and continued as an executive of this association.

On his retirement from the Newport News Shipbuilding & Dry Dock Co.,

(*Continued on Page* 29)

New York Propeller Club Holds Dinner Meeting

An important meeting of the Propeller club of New York, with an exceptionally large attendance, was held on the evening of Dec. 14 at the downtown Athletic club, New York City. The meeting was addressed by William H. Davis, deputy administrator of the N.R.A. in charge of the preparation of codes for the shipping industry. Mr. Davis took the occasion to point out to steamship companies that unless they could arrive at a satisfactory agreement on a code for the shipping industry by Jan. 1, he would be compelled to make his own recommendations for a code of fair practice.

Several hundred representatives of shipping companies attended the dinner meeting. As a solution of the problem facing the international lines in reaching an agreement on a code, he suggested fixing a minimum rate on particular kinds of cargoes and allowing the lines freedom to compete as they might see fit at rates above the minimum.

As far as the intercoastal companies are concerned he promised to make recommendations of his own for governing this trade under the N.R.A. unless they could agree among themselves on a code before the first of the year.

For handling questions of labor, Mr. Davis made the suggestion that two public relation boards be set up, one to deal with longshore labor and the other with seamen labor. In regard to longshore labor he also made the additional suggestion that all longshoremen be registered, and that employment of longshoremen by steamship companies be done only through common agents.

C. H. C. Pearsall, vice president of the Colombian Steamship Co., and president of the Port of New York Propeller club, president.

District Passenger Agent

The General Steamship Corp. Ltd. has appointed Herbert P. Wynn, district passenger agent at Los Angeles, succeeding T. E. Angelius, who has been made assistant general passenger agent for the French Line at San Francisco.

Mr. Wynn's shipping career began in 1922, when he was engaged by the Dollar Line in Shanghai. After five years in Shanghai, he spent another year in the San Francisco office of the Dollar line.

In 1928 Mr. Wynn entered the organization of the International Travel Bureau, and severed his connection with that organization in 1931 to join the passenger department of the General Steamship Corp. at Los Angeles.

Baltimore Mail Line Adds Bremen to Schedule

Fortnightly service to and from Bremen, in addition to the regular weekly service between the ports of Baltimore, Hampton Roads, Havre, and Hamburg, is provided by a new sailing schedule of the Baltimore Mail Line's transatlantic fleet of fast passenger and cargo ships. This announcement was made on Dec. 2 by Gaillard Ravenel, vice president of the Roosevelt Steamship Co., manager and operator of this line.

Decision to offer regular service resulted from the response which came from exporters and importers to the irregular service provided for over a year. Under the new schedule, every other ship will call at Bremen westbound, making a regular fortnightly service. Time of departure, itinerary and time in transit of eastbound ships will remain the same as under the old schedule.

Mail liners westbound, scheduled to call at Bremen, will leave Hamburg on Friday night and Bremen on Saturday night, and will sail from Havre on Monday instead of Sunday. Arrivals at Hampton Roads will be on Wednesdays and arrivals at Baltimore on Thursdays—a day later than formerly.

On alternate weeks the liners which do not call at Bremen will leave Hamburg on Saturday night, sail from Havre on Monday, arriving at Hampton Roads on Wednesday and at Baltimore on Thursday, so that all westbound ships whether they call at Bremen or not will sail from Havre, Monday. The time in transit will be on the same fast schedule as formerly.

The new sailing schedules will be inaugurated by the CITY OF BALTIMORE from Baltimore, Dec. 27. This vessel will call at Bremen and will sail from that port Saturday, Jan. 13. Thereafter a Mail liner will sail from Bremen every other Saturday.

Cunard, White Star Merger Is Now Certain

On Dec. 13 Neville Chamberlain, chancellor of the exchequor, speaking in the house of commons, announced that the long looked-for merger of the Cunard and White Star lines in transatlantic service is to take place soon. He further stated that the British government will extend the required financial aid for completing the Cunard superliner now on the ways at the shipyard of John Brown, Clydebank, Scotland. More than £4,000,000, it is estimated, will be needed to complete the new vessel, £2,000,000 already having been spent on her.

The name of No. 534, the Cunard superliner, it is now said, will be the PRINCESS ELIZABETH. When completed, the PRINCESS ELIZABETH is expected to regain for Britain the blue ribbon of the Atlantic. Both in speed and size, her supremacy, however, will be challenged by the NORMANDIE.

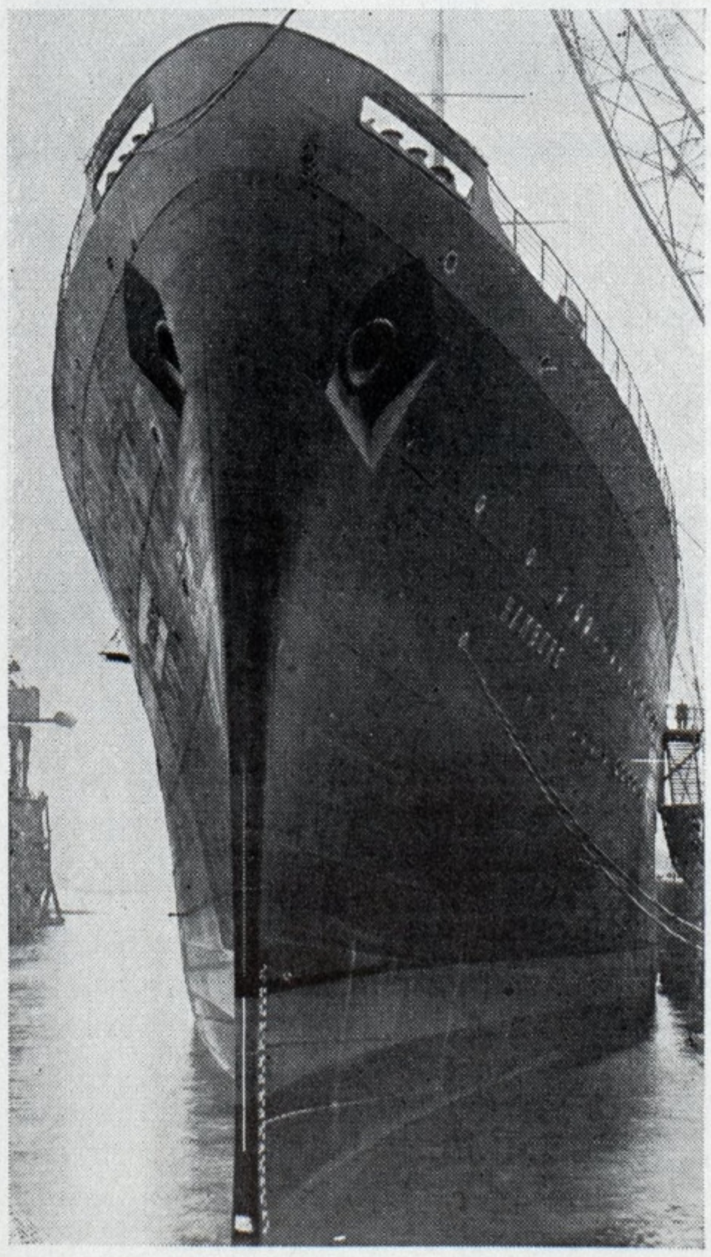
New Bows on Hamburg-American Liners

A UNIQUE ship construction job is under way at the shipyard of Blohm & Vos., Hamburg. Never before, as far as known, has so huge a program of alterations to existing ships been undertaken. Coming in one at a time, the S. S. HAMBURG, S. S. NEW YORK, S. S. DEUTSCHLAND, and S. S. ALBERT BALLIN, known as the "Ballin" type steamers of the Hamburg-American line, are to have elaborate alterations, including new bows. In the meantime, the four new bows, aligned in a row, one behind the other, were built in one of the shipyard's large floating dry docks.

Each ship by having a new bow installed will be lengthened by 39 feet, 4 inches. As a result the fore body of these ships will be very considerably fined, with the double effect of improving fuel economy or increasing the speed, and permitting attractive rearrangement and improvements in passenger accommodations.

The first of the four ships, the S. S. HAMBURG went into drydock on October 2, and was scheduled for completion early in December. It is estimated that a period of two months will be necessary for the elongation of each ship. The last of the four, the S. S. NEW YORK is scheduled to leave the shipyard early in July, 1934.

During the winter of 1929-30 the four "Ballin" type ships were fitted out with new machinery and boilers increasing their propelling power from 15,000 to 28,000 horsepower. As a result of this increase in power, their average speed was increased from 16 to 19¼ knots. The purpose of the present reconstruction is to obtain the same average speed with considerably less engine power. That is, instead of using the 28,000 horsepower available, 20,000 horsepower is calculated to be sufficient. This means a substantial saving in the fuel consumption, a most important item in the economical operation of vessels. According to the calculations of the shipyard engineers, the saving will be of such order as to pay for the reconstruction of these ships within a period of about three years.



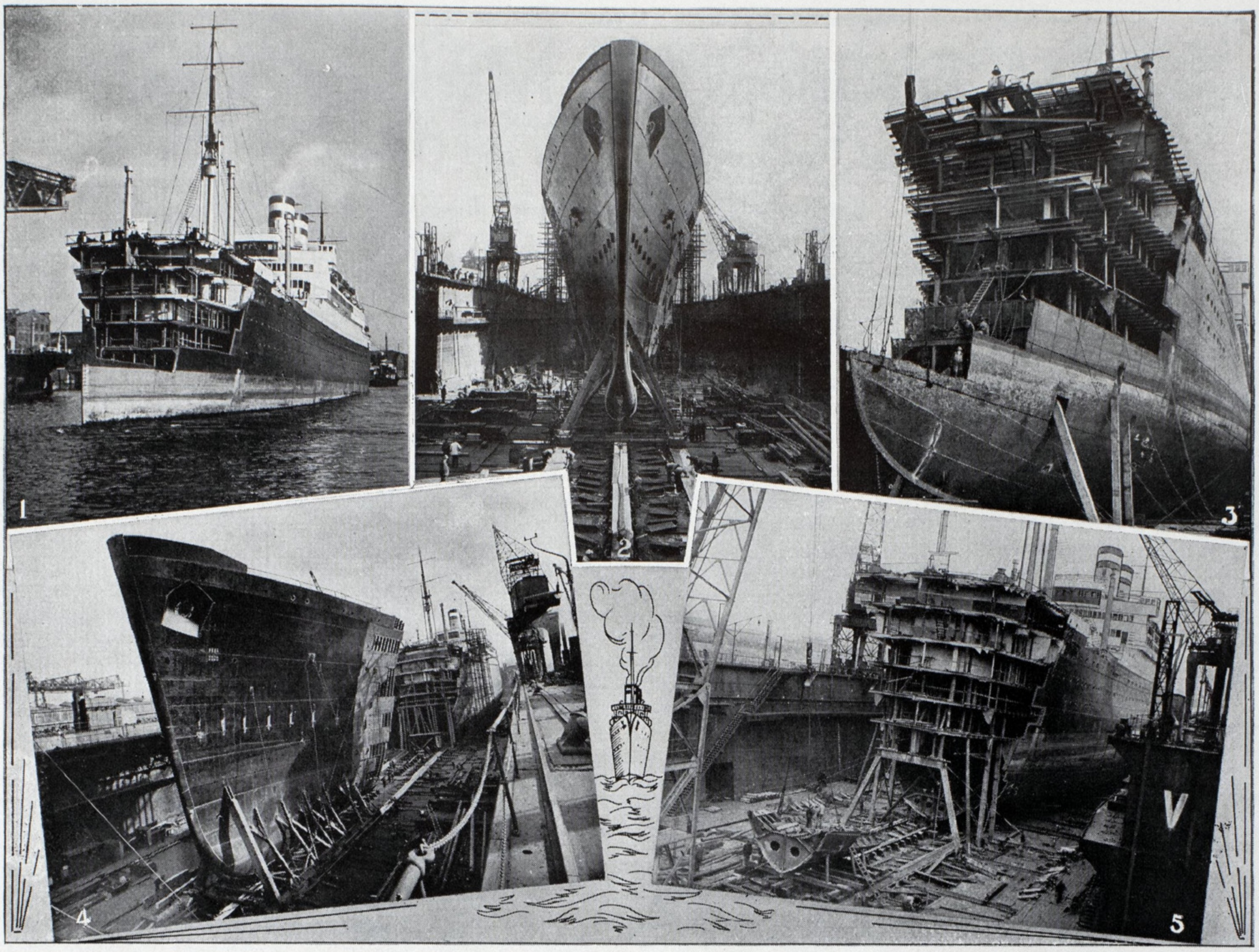
S. S. Hamburg with New Bow

This elaborate program of reconstruction is of great interest to naval architects, marine engineers and shipowners as it represents the practical application of the most recent discoveries regarding hull form, particularly of the forward end, in its relation to speed and operating cost of the ship. Numerous tests were made by German experts to ascertain the proper form of bow to insure the desired results.

To interfere as little as possible with the use of the four ships in service, the reconstruction period has been made dependent on their sailing schedules which provides for weekly sailings. In order to complete the operation in the stipulated two months, the following method of construction was followed:

Four new bows were built on the keel blocks of the drydock in much the same manner in which an entire ship might be built in a drydock. Each bow is 78 feet, 8 inches high; 82 feet long; and has a weight of approximately 600 tons.

When one of the steamers enters the shipyard for the projected alterations a portion of the old bow about 72 feet in length and of about 500 tons in weight is cut away and scrapped. All accessories such as machinery, piping, berths, and any other equipment which can be profitably used in the new bow are salv-



New bows for Hamburg-American liners. 1—S. S. Hamburg with old bow partly dismantled entering drydock. 2—Front view of one of the bows in place on drydock where it was built. 3—S. S. Hamburg in drydock before lower part of the old bow had been dismantled. 4—The new bow on a slideway, being pulled slowly up to the ship by means of block and tackle. 5—The old bow completely dismantled; the last remnants of the old double bottom being removed

aged. This partial scrapping is carried out down to a safe point above the waterline of the vessel while the ship is still afloat lying at the wet dock under the large 250-ton crane. The portion below the water line is dismantled while the vessel is in a second floating dry dock.

After the old bow has been cut away entirely the new bow is joined to the hull of the vessel by the insertion of a section 29 feet, 6 inches between the bow and hull. To do this the two floating dry docks are brought together, end to end, and the slideway upon which the new bow rests is extended to reach below the hull of the vessel. The new bow is then drawn along the slideway up to the hull of the steamer. After careful adjustment, by means of hydraulic power, the two are joined together, welding being extensively used.

All told, the new bow adds about 800 tons of steel to the original hull. As soon as the joining process has reached a point which permits the ship to float, she leaves the dry dock. Additional work in connection with interior finish and equipment is done while the vessel is afloat alongside the quay.

By the lengthening of the ship additional space is available which permits material improvements of a portion of the passenger accommodations. A number of inside cabins in first class are eliminated and the space is added to the adjacent outside rooms. In this way the size of double rooms is increased and a number of private bath rooms are added.

Practically all of the third class staterooms will be enlarged and without exception are to be provided with hot and cold running water, wardrobes and other conveniences. By a slight reduction in passenger capacity it becomes possible under the new arrangement to limit most of the third class rooms to two berths and also to provide many single berth cabins. Available enclosed deck space will be greatly enlarged. A portion of this space is being fitted out as a dance floor.

The S. S. HAMBURG, first of the four liners to be lengthened and to enter service, arrived in New York Dec. 15 on her first crossing since the alteration had been made.

It was found on this first trip, in stormy weather against head seas, that the anticipated savings were realized. Only 20,000 horsepower was required as compared with 28,000 horsepower previously. This means a saving of 60 tons of fuel oil per day, costing about $500.

Dr. Emil Goss, director of the engineering department of the Hamburg-American line, arrived on the HAMBURG and indicated that still better efficiency will be obtained by a change in the characteristics of the propellers. The indication is that the diameter and pitch should be reduced. At no sacrifice in speed the savings in fuel consumption, it is now established by the records of an actual voyage, will be $8000 a round trip, which corroborates the estimates of the shipyard.

Dr. Goss, who is largely responsible for the design of the new bow, will be entertained by American naval architects and marine engineers, and will, no doubt, give some technical details on this rather revolutionary reconstruction of comparatively modern ships. The new bow has also greatly improved the seagoing qualities and the ship's general appearance.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

IN THE case of PHOENIX, 3 Fed. Supp. 1017, the court held that the evidence established that unseaworthiness of the vessel, consisting of a defective "Jacob's ladder," was the proximate cause of injuries sustained when the ladder broke while a seaman was descending from the ship to the dock, and that the seaman suffered approximately 50 per cent disability from injuries to his hand and arm. The seaman, it was decided, was entitled to $2000 for compensatory damages, wages, maintenance and cure.

* * *

THE contract of affreightment involved in the cast of GOTHIC STAR, 4 Fed. Supp. 240, exempted the carrier from liability for damage caused by decay, and libel was brought because of the decayed condition of fruit on its arrival at the port of destination. The court held that it was incumbent on the shipper to show by a preponderance of proof that negligence on the carrier's part caused or contributed to the decay. Of prime interest is the court's description of the vessel libeled, as follows: "The GOTHIC STAR is a refrigerated vessel, equipped for carrying fruit from the Pacific coast to European ports. The compartments are insulated and kept cold by the cold air system, cold air being driven through a trunk along the starboard side, escaping into the compartments through holes in the trunk and being sucked back through similar holes in a trunk along the port side. In this way cold air constantly circulates across the compartments and the desired low temperatures are maintained. The cold air method is superior to the brine method often used on refrigerating ships**"

* * *

ACT OF congress of July 20, 1790, provided that the master of a ship bound from a port in the United States to any foreign port * * * must make an agreement in writing or print with every seaman on board in a prescribed form; and, further, that the failure of the master to so do made him liable to pay the seamen the highest wages which shall have been given at the place of shipping for a similar voyage within three months before the shipping. This statute, it was declared in the case of LILY, 4 Fed. Supp. 268, is not applicable to voyages to Mexico, because of the provisions of subsequent acts of June 7, 1872, and January 15, 1873. The first of these acts provided that the master of every ship bound to a foreign port must make an agreement in writing in certain terms with his seamen before a shipping commissioner. The second act amended the first by adding the proviso that it should not apply to masters of vessels when engaged in trade between the United States and the British North American possessions, or the West Indies islands, or the Republic of Mexico.

* * *

CLAIMS for damages to vessels, except in most unusual circumstances, must be limited to the value of the vessels. If the cost of repairing a vessel injured in collision be greater than the price at which a vessel to replace her could be purchased in the open market, obviously such vessel ought to be considered a total loss, and the measure of damages recoverable is her market value, with interest from time of collision, and incidental expenses. It is fundamental in the law of damages that the injured party is entitled to compensation for the loss sustained. Where property is destroyed by wrongful act, the owner is entitled to its money equivalent, and thereby to be put in as good position pecuniarily as if his property had not been destroyed. In the case of the total loss of a vessel, the measure of damages is its market value, if it has a market value at the time of destruction.—RUTHIE M. 4 Fed. Supp. 317.

* * *

A GAS screw boat, by proceeding to high seas outside the territorial limits of the United States and making contact there with a vessel of foreign registry, did not make a foreign voyage within the provisions of section 4337 of the revised statutes of the United States, so as to be subject to forfeiture for not having first given up her enrollment and license. So long as a vessel is passing from one port of the United States to another, she may keep as far from shore as she pleases without incurring the penalty for proceeding on a foreign voyage without first giving up her enrollment and license, it was held in the case of WINNIE, 65 F. (2d) 707. A "foreign port" within the meaning of the statute is not any place on the high seas outside the territorial limits of the United States. A foreign port is a port or place exclusively within the sovereignty of a foreign nation. A voyage to such a port or place is a foreign voyage. Pleasure boats of all descriptions, the court pointed out, are "outbound" day by day and go up and down the coast on the high seas, but this does not constitute a foreign voyage within the meaning of the statute.

* * *

IN THE case of Inland Waterways Corp. v. Standard Commercial Tobacco Co., 65 F. (2d) 715, it appeared that under the original bill of lading, tobacco was to be delivered by river carrier at New Orleans to ship for a foreign port, but in consideration of its own separate freight, the ship issued its own contract of carriage and did not adopt the original one. It was held, therefore, that each carrier was bound, in the absence of a statute or contract otherwise, only for safe carriage over its own line and safe delivery to the next connecting carrier. It was held, further, that a shipper has a lien for damage done to goods actually put aboard ship and may proceed in rem against the ship for damages; that goods may become cargo entitled to lien against the ship for damages before actual deposit on ship if brought alongside on the wharf or a lighter and custody for immediate carriage is accepted by the ship's officers; that, while a bill of lading is material evidence that the carrier has taken custody of goods, it is neither essential or conclusive; and that a ship, like any other consignee, is entitled to inspect goods before accepting them for carriage.

* * *

IN LINE with the preceding decision it was said in the case of United States v. Bruce Dry Dock Co., 65 F. (2d) 938, that it is not essential to jurisdiction in admiralty that a tort be committed on board a vessel. It was decided that a master of a government lightship, thrown onto a dry dock during a hurricane, was negligent in leaving it in a slip insecurely moored to the wharf whether repair work thereon had been completed or not.

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	230	1,157,029	244	1,267,897
October	270	1,481,453	251	1,406,668
September	269	1,663,403	277	1,633,829
August	277	1,656,291	280	1,676,614
July	270	1,477,769	256	1,397,794
June	249	1,482,801	264	1,580,337
May	255	1,573,337	244	1,513,231
April	232	1,330,774	232	1,311,863
March	243	1,466,812	264	1,536,778
February, 1933	237	1,373,856	236	1,380,867

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)
(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	47	144,111	40	119,896
October	68	186,588	51	152,700
September	65	182,418	44	126,290
August	61	181,283	61	178,894
July	69	203,042	53	151,781
June	51	152,234	54	149,616
May	58	157,704	49	141,334
April	63	193,946	41	131,990
March	60	192,817	43	141,445
February, 1933	38	105,262	20	56,395

Boston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	90	323,540	62	230,969
October	96	335,488	60	210,010
September	110	348,981	80	279,531
August	129	453,348	101	329,686
July	124	410,500	96	379,721
June	118	378,179	93	303,239
May	111	295,854	83	254,667
April	86	271,864	69	226,862
March	85	259,203	65	240,768
February, 1933	83	285,162	53	191,084

Portland, Me.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	15	29,335	18	35,579
October	14	27,953	14	32,913
September	15	26,225	12	28,028
August	16	28,877	18	32,727
July	11	24,324	9	23,063
June	11	24,615	12	26,271
May	13	19,020	13	23,395
April	5	9,254	5	7,387
March	9	24.186	10	23,989
February, 1933	19	52,001	19	48,913

Providence

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
October, 1933	4	13,606	4	9,730
September	2	4,430	5	13,279
August	6	11,862	4	10,186
July	3	6,171	2	9,465
June	6	16,192	2	4,437
May	3	10,490	3	3,834
April	8	30,156	2	5,650
March	4	17,052	....	.....
February	7	27,520	1	4,393
January, 1933	2	7,473	1	3,171

Portland, Oreg.

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
September, 1933	25	97,576	38	141,839
August	22	83,506	34	129,908
July	26	99,339	29	111,559
June	20	78,651	34	120,089
May	25	98,688	28	105,115
April	17	67,220	24	97,104
March	20	79,537	43	162,970
February	25	97,554	34	130,014
January	24	95,271	33	138,372
December	22	92,267	41	166,858
November, 1932	19	78,628	41	157,544

Baltimore

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	90	270,023	88	267,784
October	88	284,997	90	289,864
September	85	273,994	84	270,189
August	95	299,114	98	307,841
July	91	272,589	90	282,788
June	65	205,724	71	240,487
May	79	237,046	78	229,333
April	63	198,940	58	178,957
March	72	228,806	72	223,594
February	63	195,299	75	226,672
January, 1933	77	247,903	78	252,052

Norfolk and Newport News

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	12	24,053	38	79,620
October	8	18,873	38	83,525
September	10	24,615	24	53,036
August	8	16,472	34	68,011
July	16	32,370	34	71,798
June	16	30,163	31	60,544
May	18	33,521	32	68,941
April	14	39,010	36	100,485
March	18	56,097	42	111,038
February, 1933	15	49,213	36	82,544

Jacksonville

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	8	13,405	8	19,108
October	11	24 365	6	8,893
September	8	11,528	7	13,086
August	7	12,477	7	13,152
July	13	22,553	11	25,670
June	9	22,192	6	12,222
May	5	13,102	9	16,275
April	3	8,297	8	20,260
March	7	18,536	9	18,137
February, 1933	6	15,126	7	13,454

Key West

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	23	33,556	22	31,330
October	22	37,180	23	39,878
September	22	38,648	23	38,659
August	18	33,210	18	32,716
July	24	39,400	22	37,180
June	27	40,569	27	42,160
May	41	55,097	39	59,075
April	41	50,121	35	47,458
March	42	57,720	39	54,508
February, 1933	37	52,615	34	49,320

Mobile

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	114	260,755	114	249,344
October	118	247,474	124	297,436
September	116	265,547	113	266,183
August	100	223,940	102	203,716
July	110	221,610	114	236,622
June	97	206,147	91	183,736
May	95	210,743	105	231,000
April	105	209,469	109	235,429
March	96	234,328	91	206,064
February, 1933	80	184,669	83	200,850

Seattle

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	177	574,203	153	518,654
October	176	618 298	165	572,714
September	151	496,684	149	513.291
August	183	604,618	161	573,703
July	166	545,372	169	554,228
June	36	160,127	36	157,887
May	37	149,245	38	164,025
April	41	188,899	40	180,517
March	47	194,485	51	216 803
February, 1933	43	196,979	43	190,338

New Orleans

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	148	439,238	152	430,631
October	154	467,332	169	506,324
September	154	443,981	168	470,271
August	144	420,570	151	429,183
July	169	468,111	184	493,775
June	147	422,280	146	422,235
May	150	444,982	151	434,952
April	142	409,411	154	416,833
March	161	464,728	161	457,880
February	128	378,040	127	366,948
January, 1933	135	307,750	145	410,412

Charleston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	43	123,628	39	109,151
October	34	97,585	33	91,526
September	42	116,048	32	83,944
August	33	92,987	27	76,881
July	35	102,115	29	82,742
June	32	84,362	28	75,023
May	21	53,125	20	49,888
April	19	49,280	20	52,449
March	35	99,612	29	83,243
February, 1933	24	65,228	24	65,218

Galveston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	16	37,590	85	262,800
October	21	44,388	104	304,402
September	10	19,602	94	277,642
August	19	44,012	69	205,442
July	22	33,718	77	213,821
June	27	56,231	79	227,842
May	27	58,632	86	261,124
April	27	64,360	73	215,020
March	19	34,677	83	239,683
February	17	29,935	69	200,485
January, 1933	23	43,723	79	235,748

Los Angeles

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	143	539,624	162	592,724
October	160	623,572	152	592,212
September	154	562,597	152	561,294
August	156	578,255	156	605,610
July	165	641,116	152	601,731
June	189	670,782	171	671,704
May	190	600.184	185	630,905
April	178	625,508	190	614,741
March	152	550,205	167	599,191
February, 1933	143	528,613	155	543,628

San Francisco

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	144	619,874	182	806,020
October	169	753,650	168	717,133
September	150	654,888	141	658,887
August	174	748,739	170	743,918
July	156	710,857	154	717,664
June	162	715,236	162	738,436
May	160	717,412	161	680,493
April	138	733,163	150	652,593
March	145	667,902	156	693,893
February, 1933	145	658,005	144	621,439

Houston

(Exclusive of Domestic)

Month	—Entrances— No. ships	Net tonnage	—Clearances— No. ships	Net tonnage
November, 1933	14	49,486	30	106,943
October	28	105.818	41	151,872
September	20	70,827	27	89,893
August	22	91,240	31	117,641
July	33	122,722	40	153,173
June	28	96,996	34	118,058
May	32	127,718	43	164,896
April	20	80,016	29	103,049
March	16	71,995	28	101,486
February, 1933	20	71,711	28	95,755

Note: At the port of Philadelphia, additional vessels in the foreign trade in this category were 69 of 231,297 net tons entered and 69 of 239,745 net tons cleared for the month of November.

Latest Data on New Marine Work

Information on New Ships Ordered—Building and Repair Contracts Let—Shipping Board Loans Made, Authorized or Pending

IN THE December issue of MARINE REVIEW a summary was given of the bids received Nov. 14 by the United States coast guard for the construction of four steel hull diesel electric cutters.

It will be recalled that the estimates submitted for two and four boats by the United States navy yard, Charleston, S. C., were lower than any of the firm bids received from private shipyards. The navy yard estimates for two boats and for four boats, per boat, are respectively, $245,153 and $235,953. The nearest firm bids from private yards were Wallace Bridge & Structural Steel Co., Seattle, Wash., at $264,150 for each of two boats, with no bids on four boats; and Consolidated Shipbuilding Corp., Morris Heights, N. Y., for two and four respectively, $273,175 and $257,741 per boat.

On Dec. 8, a notice issued by the United States coast guard stated: "The estimate of the navy department submitted by the Charleston navy yard, Charleston, S. C., for the construction of four coast guard harbor cutters, being satisfactory, has been approved."

From this it is understood that award for the construction of these four harbor cutters for the United States coast guard has been made to the United States navy yard, Charleston, S. C.

These cutters will be 110 feet, 6 inches in length overall; 24 feet in molded beam; 12 feet, 7 inches in molded depth amidships. The maximum draft will be about 10 feet, 6 inches, and the displacement fully loaded will be about 290 tons. They are to be propelled by single screws with diesel electric machinery of 800 shaft horsepower in two units.

Bids on Two Ocean Tankers

The Standard Vacuum Transportation Co., New York, N. J. Pluymert, naval architect, on Dec. 18, was to receive bids for building two single screw diesel tankers of about 15,000 tons each.

It is understood that these tankers are to be generally similar to the tanker BRILLIANT completed for the same owner by the Sun Shipbuilding & Dry Dock Co., Nov. 17, 1930.

Propelling machinery for the tanker BRILLIANT was one Sun Doxford, opposed piston, oil engine of two cycle type and four cylinders. At 80 revolutions per minute the brake horsepower at the shaft is 2800. General particulars of the BRILLIANT are length overall, 497 feet, 10 inches; length between perpendiculars, 480 feet, 6 inches; beam molded, 65 feet, 9 inches; depth molded, 37 feet; draft, 27 feet, 2 inches; displacement loaded, 19,160 tons; gross tonnage, 9078; net tonnage, 5528; deadweight, 13,430 tons; and speed, 11 knots.

Bids on Tanker, Barge

The Gulf Refining Co. has received bids for the construction of one 255-foot 15,000-barrel capacity, self-propelled tanker of canal type. Bids have also been received for the construction of one non-propelled oil barge of canal type to be 205 feet long; 39 feet wide; and 12 feet molded depth. Both welded and riveted construction are being considered.

As this is written no definite action has been taken in placing orders for this new construction. It is expected that a decision will be made either just before or shortly after the new year.

United States Engineers

On Dec. 14 the United States Engineer office, Memphis, Tenn., received bids for the construction of a wooden hull quarter boat to have a length overall of 72 feet; beam, 16 feet; depth at side, 4 feet 6 inches; and draft, 1 foot 3 inches.

On Dec. 18 notice was received from the United States Engineer office, Vicksburg, Miss., that plans and specifications would soon be issued for the construction of one channel and snag boat complete with a molded length of 170 feet, molded beam, 38 feet and depth molded, 7 feet 6 inches.

Full information may be received from the United States Engineer office, Vicksburg, Miss., Major Lunsford E. Oliver, corps of engineers.

Pearl Harbor Repair Yard

A new ship repair basin is to be constructed for the United States navy department at the navy yard, Pearl Harbor, Honolulu. This plant is to have a capacity for accommodating seven major war vessels under repairs at one time. It is the largest shore facility undertaken by the navy since the World war. Contract for its construction was awarded to the Hawaiin Dredging Co., Honolulu, at a cost of $2,789,600, not including cranes and other equipment.

Plans for the new ship repair basin call for the construction of a pier 144 feet long and 100 feet wide; two side quay walls, 1244 feet and 794 feet long respectively; also, head quay walls forming two slips 300 feet and 322 feet wide.

The Star Iron & Steel Co., Tacoma, Wash., has been awarded contract at $257,580 for furnishing four cranes for this repair basin. One of these cranes is to operate on special tracks on the quay walls and pier and is to have a capacity of 50 tons at 90-foot reach; the other three cranes are to have a capacity of 15 tons at 85-foot reach. A stationary crane on the west quay wall on special foundation is also to be installed with a capacity of 200 tons at 85-foot reach.

Navy Contracts to Sperry

On Dec. 11 the Sperry Gyroscope Co., Brooklyn, N. Y., received contracts from the United States navy, amounting to $452,000 for gyro compasses for installation on the cruisers, aircraft carriers, gunboats, destroyers, and submarines, under construction in the new navy program.

Gyro-compasses are used on all navy ships today because of their accuracy. Another distinct advantage of the gyro-compass is that readings of the master compass can be transmitted electrically to repeater compasses in as many as 40 locations throughout the ship. This characteristic of transmission of readings also makes possible the recording of the vessel's course, as well as steering the ship automatically.

On the same day the Sperry Gyroscope Co. also received orders from the United States navy totaling $291,000 for 36-inch high intensity 350,000,000 beam candle power searchlights for installation on the new vessels now under construction. These high powered searchlights are equipped with shutters for signalling and are also used in locating the position of airplanes in flight, or of other ships at sea.

Ocean Cutter Bids Received By U. S. Coast Guard

Bids received Nov. 28, by the United States coast guard, treasury department, Washington, D. C., for the construction of nine ocean going cutters designated as Nos. 63-73 inclusive were, according to officials of the coast guard, "obviously excessive."

On Dec. 18 the acting secretary of the treasury rejected all bids. Invitations for new bids on a coast guard design are to be issued shortly.

Bids were received as follows:

National Shipbuilding Co. Inc., Portsmouth, Va., (no bid bond) $1,497,313 for each of six, with delivery of first vessel in 600 days, and subsequent vessels at 80-day intervals; with alternate bid, diesel electric machinery, of $1,493,313 and $1,463,913 for each, if six are ordered.

United Dry Docks Inc., New York, N. Y., submitted bids of $1,778,000 for each of two; $1,747,000 for each of three, and $1,723,000 for each of four; with delivery of the first vessel in 780 days, and with intervals of 60 days for delivery of subsequent vessels. An alternate bid of $2,200,000 was submitted using diesel electric machinery. The proposals were submitted with reservations regarding N.R.A. code, adjustment material, labor, or other factors.

The Pusey & Jones Corp., Wilmington, Del., submitted a bid of $1,818,700 for each of two vessels. No bids were tendered for any greater number. Delivery of the first vessel was promised in 545 days, and the second vessel at an interval of 90 days.

Maryland Dry Dock Co., Baltimore, Md., submitted bids of $1,839,543 for each of two vessels, and $1,803,000 for each of three, with delivery of the first vessel in 548 days and with intervals of 60 to 90 days for the subsequent vessels. These bids include Winton diesel generators and may be reduced by $1000 if Cooper-Bessemer, Hill, Buda or Cummins diesel engines are accepted.

Federal Shipbuilding & Dry Dock Co., Kearny, N. J., submitted bids of $2,116,000 for each of two; $2,000,000 for each of three, and $1,944,000 for each of four. Delivery was promised on the first vessel in 635 days and subsequent vessels at intervals of 60 days. Reservations were made in the bids regarding NRA code, adjustment material, labor, or other factors.

Estimates were received as follows from four United States navy yards:

Navy yard, New York, submitted estimates of $1,780,800 for one vessel; $1,607,200 for each of two vessels, with delivery in 750 days. An alternate estimate, using diesel electric machinery, of $1,934,100 was also submitted.

Navy yard, Philadelphia, Pa., submitted estimates of $1,728,500 for each of two vessels; $1,697,667 for each of three vessels; $1,661,250 for each of four vessels; $1,636,000 for each of five vessels; and $1,611,500 for each of six vessels. If the yard is to act as co-ordinating agency for designing, drafting, purchasing, etc., $125,000 is to be added to the group estimate. If the yard is to act as distributing agency for plans, and purchasing agency for material, $50,000 is to be added to the group total. Delivery of the first vessel was promised in 660 days, and subsequent vessels at 60-day intervals.

Navy yard, Mare Island, Calif., submitted an estimate of $1,962,723 for each of two, with delivery of the first vessel in 810 days and delivery of the second vessel in 30 days.

Navy yard, Portsmouth, N. H., sub-

(*Continued on Page* 28)

Index for 1933

THE index for the year 1933 *covering all the valuable editorial material which appeared in* MARINE REVIEW *last year, is now ready for distribution. Copies will be sent on request, without charge, to those subscribers who have kept a complete file of copies and desire the index.*

Four Tankers Ordered for Coastwise, Canal

Confirmation has been received that the Standard Vacuum Transportation Co., New York, has given an order to the United Dry Docks Inc., New York, for the construction of three twin screw diesel tankers for coastwise and canal service. Two of these vessels are to be of riveted construction and one of welded construction. Work is to start by Jan. 1.

It is understood that the new tankers are to be generally similar to the NEW YORK SOCONY, particulars of which were noted in the item referring to this contract in the December issue of MARINE REVIEW. Propelling machinery in these new tankers will be two McIntosh-Seymour diesel engines developing a total of about 800 horsepower.

Confirmation has also been received that a contract has been awarded to the Sun Shipbuilding & Dry Dock Co., Chester, Pa., for the construction of a coastwise tanker, similar to the WHITE FLASH, by the Atlantic Refining Co., Philadelphia.

The propelling machinery of this new tanker is to be two 6-cylinder 9½ x 10½ inches solid injection, McIntosh Seymour diesel engines, each rated at 250 horsepower at 600 revolutions per minute. Each engine is to be direct connected to a direct current generator. The two generating sets will furnish current to an electric motor direct connected to a single propeller shaft.

Since the new tanker is to be, except for the propelling machinery, in all respects a sistership of the WHITE FLASH, general particulars will be: length overall, 201 feet, 2 inches; length between perpendiculars, 190 feet; beam molded, 34 feet; depth molded, 12 feet; draft, 9 feet, 6 inches; displacement loaded, 1330 tons; gross tonnage, 616; cargo capacity, 1000 tons; and speed in service, 9 knots.

The Orton Crane & Shovel Co., Chicago, has been awarded a contract by the navy department for two drydock cranes for the navy yard at New York, at $218,730.

Bunker Prices

At New York

	Coal F. o. b. per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Dec. 18, 1933	5.35@5.20	1.25	4.79
Nov. 18	5.35@5.20	1.15	4.70½
Oct. 18	5.00@5.75	1.15	4.70½
Sept. 18	4.45@4.75	1.15	4.70
Aug. 18	4.45@4.75	.90	4.32
July 18	4.30@4.60	.90	4.32
June 18	4.30@4.60	.80	4.08
May 18	4.30@4.60	.80	4.08
Apr. 18	4.30@4.60	.80	4.08
Mar. 18	4.30@4.60	.80	4.08
Feb. 18, 1933	4.30@4.60	.80	4.08

At Philadelphia

	Coal trim in bunk per ton	Fuel oil alongside per barrel	Diesel engine oil alongside per gallon
Dec. 18, 1933	4.65@4.50	1.15	4.76
Nov. 18	4.65@4.50	1.15	4.76
Oct. 18	5.00@5.75	1.15	4.76
Sept. 18	4.45@4.75	1.15	4.88
Aug. 18	4.45@4.75	.90	4.28
July 18	4.30@4.60	.90	4.28½
June 18	4.30@4.60	.80	4.04
May 18	4.30@4.60	.80	4.04
Apr. 18	4.30@4.60	.80	4.04
Mar. 18	4.30@4.60	.80	4.04
Feb. 18, 1933	4.30@4.60	.80	4.04

Other Ports

Nov. 18, 1933

Boston, coal, per ton	$ 7.21
Boston, oil, f. a. s. per barrel	$1.70
Hampton Roads, coal, per ton, f.o.b. piers	$4.50–4.80
Cardiff, coal, per ton	13s 9d
London, coal, per ton	—s –d
Antwerp, coal, per ton	17s 0d
Antwerp, Fuel oil, per ton	67s 6d
Antwerp, Diesel oil, per ton	82s 6d
British ports, Fuel oil	87s 6d
British ports, Diesel oil	102s 6d

Note: Figures given for coal at New York and Philadelphia are for Classes A and B according to the Code; Class C is slightly less.

Activity in the Northwest in Ship Construction

Contracts for steel vessels, already awarded and pending, provide more work for the shipyards in the Puget Sound area in 1934 than in any year since the World war. These jobs, all government but one, total nearly $2,500,000, and are divided among four Seattle yards.

The largest contract is held by the Lake Union Dry Docks & Machine Works, now engaged in preliminary work on the construction of three patrol boats for the coast guard, obtained on the total bid of $789,759. The keels are to be laid early in 1934 and the vessels are to be powered with Winton diesel engines. The same yard is completing a 120-foot wooden hull, diesel power, tuna fishing vessel for the Franco-American Co., San Pedro, Calif. This vessel, modernly equipped, will cost in excess of $75,000.

Construction will be started in January by the Lake Washington Shipyards on the 231-foot steel motorship for the Northland Transportation Co. At a total cost of $500,000, as reported in the September issue of MARINE REVIEW, this contract was awarded several months ago. Propelling machinery is to be two 1000-horsepower Washington Iron Works deisel engines. The deck equipment is to be supplied by Allan Cunningham, Seattle.

The Wallace Bridge & Structural Steel Co. is low bidder on two steel cutters for the public health service at $132,556. Award is still pending.

The Berg Shipbuilding Co. has under construction a steel lighthouse tender HEMLOCK, representing an investment of nearly $400,000. It is expected that this vessel will be launched within 30 days. The same yard is low bidder for the construction of the tender HOLLYHOCK, as reported in the December MARINE REVIEW.

Wood Shipyards on Puget Sound anticipate a normal volume of new construction and repair work this winter. While the fishing industry is not prosperous, some new craft are being planned.

Bids are being taken for furnishing a 350-horsepower diesel engine for the 132-foot four-masted schooner RUBY, recently sold to engage in trading in Alaska.

At the plant of the Todd Dry Docks Inc., Seattle, the S. S. HAMLIN F. MCCORMICK is undergoing repairs, following stranding. This job involves 84 bottom plates, half of them to be renewed. The total cost of repairs is $90,000. No action has yet been taken in reconditioning the American Mail liner, PRESIDENT MADISON, for which the Todd yard was low bidder at a figure of approximately $1,000,000.

Another large job not yet authorized by the owner is the rebuilding of the steam ferry PERALTA for the Puget Sound Navigation Co. Plans call for removal of the PERALTA'S steam machinery and the installation of a 3000-horsepower diesel engine. The upper works are to be completely rebuilt. Reference to the reconstruction of the PERALTA was made in the November MARINE REVIEW.

Coast Guard Bids Received

(*Continued from Page 27*)

mitted estimates for diesel electric drive only. The estimate submitted with Electric Boat Co. diesel engines was $2,340,000. A second estimate of $1,984,024 was submitted, using Hooven Owens Rentschler Co. and Westinghouse Electric & Mfg. Co. propelling machinery, with cost of Winton diesel generator sets not included.

The original specifications of the United States coast guard covering these vessels call for a hull of steel construction; length overall, 328 feet, 6 inches; beam molded, 41 feet 3¾ inches; depth molded, amidships, 23 feet 6 inches; draft corresponding to normal displacement, 12 feet 6 inches; and displacement, 2000 tons. The vessels are to be propelled by twin screws, driven by geared steam turbines of a total estimated shaft horsepower of somewhat over 7000. Apparently in the request for bids alternate proposals called for propelling machinery of diesel electric type in at least three of the nine vessels proposed.

Marine Machinery Progress

During 1933 the General Electric Co. actively pursued its design work in an effort to improve the efficiency of propelling equipments and to reduce the weight and space required for their operation. Of special interest was the advancement made in the application of high pressure steam, the practical designs evolved calling for temperatures of 850 degrees Fahr. and pressures up to 650 pounds per square inch.

Considerable progress has also been made in the design of propelling machinery utilizing the mercury vapor process.

In auxiliary equipment, the most outstanding development was the completion of design for the use of alternating current motors to meet practically every navy shipboard requirement. Toward the close of the year, work was actively under way on double reduction propulsion geared turbine equipments for six new twin screw destroyers. This construction comprises 12 equipments and 36 turbine casings, each turbine equipment consisting of high pressure, low pressure and cruising units. Each ship will have two equipments —one for each of its propellers— providing approximately 43,000 shafts horsepower for the ship.

Cruiser Astoria Launched At Bremerton Wash.

The newest fighting ship for Uncle Sam's navy, the 10,000-ton cruiser ASTORIA was launched Dec. 16 at the United States navy yard, Bremerton, Wash.

As the ASTORIA was built in drydock, the launching became a simple manner of floating the vessel by filling the dock. Miss Leila C. McKay of Portland, Ore., sponsored the new ship by breaking a bottle of California champagne over the bow. The new vessel bears the name of one of the first white settlements in the Pacific northwest, and the sponsor is the great-granddaughter of Alexander McKay, a partner of John Jacob Astor in founding this settlement as a fur trading post.

The ASTORIA is the second cruiser built in the large graving dock at the Bremerton navy yard, the LOUISVILLE having been launched from the same dock Sept. 1, 1930. The new cruiser is 588 feet long, 60 feet in beam, and 21½ feet in draft. The propelling power consists of geared steam turbines with a total of 107,000 horsepower, and she will have a designed speed of 32.5 knots. The armor plate is 5 inches in thickness and she has an armament of nine 8-inch guns, eight 5-inch anti-aircraft guns, and eight anti-aircraft machine guns mounted in the mast. She will have a hangar suitable for housing four planes and there will be two revolving airplane catapults.

The Edward Valve & Mfg. Co. Inc., East Chicago, Ind., recently issued a description of its cast steel valves, in globe and angle stop, check, and feed line stop-check designs. All standard series of valves suitable for working steam pressures of 300 pounds to 1500 pounds are described with specifications, dimensions and list prices.

Repair Work under way

Work is scheduled to commence in January, at the Fletcher yard of the United Dry Docks Inc., New York, on a low bid of $255,246, in reboilering and other repairs to the EL MUNDO, EL OCCIDENTE, and EL ORIENTE of the Southern Pacific Steamship Co. These vessels were built at Newport News in 1910. Bids on this work were taken early in the fall, but the contract has only recently been awarded.

Brewer Drydock, Staten Island, N. Y., on a low bid of $31,000 was awarded the contract for repairing the American Hawaiian Steamship Co.'s vessel OHIOAN. The OHIOAN was in collision, sometime in November, with the S. S. LIBERTY.

Marine Electrical Progress During the Past Year

By H. C. Coleman

LOOKING back over the shipbuilding activity during the year 1933 we see a marked change in the trends as compared with those of the past few years. During 1930, 1931 and most of 1932, the greater part of our shipbuilding facilities were kept busy with the construction of a considerable number of large combination passenger and cargo vessels constructed with the help of government loans made available by the Jones-White merchant marine act of 1928 in connection with mail contracts, as well as an appreciable number of smaller craft for coastwise, river and harbor work. A relatively small portion of the country's shipbuilding capacity was being used for naval construction. In the latter part of 1932 and the first half of 1933, the shipyards delivered the remainder of the large vessels contracted for under the merchant marine act. In the same period, there was a distinct falling off of orders for small craft. This left the shipyards with very little work in hand.

The New Naval Program

The launching of the new naval building program by the new administration has changed the entire shipbuilding trend during the last six months of 1933 from one of mainly merchant marine construction to one of predominantly naval and other government vessels. Thus, the government building program has brought forth a great deal of activity in the shipbuilding and marine equipment field at a time when it was badly needed because of the great reduction in commercial shipbuilding activity.

The last one of the large combination passenger and cargo vessels built under the mail contract provisions, the S. S. WASHINGTON, was delivered to her owner the United States lines early in May, and sailed on her maiden voyage May 10, 1933. While this vessel is a sister ship of the S. S. MANHATTAN which has made such an enviable record during the past year, a review of some of the electrical features of this outstanding American vessel seems fitting. Electrical power is utilized throughout the vessel for all sorts of operations and services. For supplying the power there are four 500-kilowatt, 250-volt, Westinghouse direct current turbine generator sets. A 75-kilowatt diesel driven generator and a 200-ampere capacity battery are provided to supply power in an emergency in case of failure of the main auxiliary power plant. An indication of the extensive use of electrical power may be gained from the fact that this ship carries, exclusive of stateroom fans, more than 250 electric motors with a total horsepower of about 3600, most of which were furnished by the Westinghouse company.

The author of this article, H. C. Coleman, is an engineer on the staff of the marine electrical engineering department, Westinghouse Electric & Mfg. Co., Pittsburgh.

Two Pipeline Dredges

During 1933 two new self-propelled pipeline dredges, the SAINTE GENEVIEVE and the GRAFTON, were delivered by the builder, the Dravo Contracting Co., Pittsburgh, to the United States engineer corps for service on inland waterways. Power for operation of these dredges is furnished by oil-fired steam boilers. Electric drive is used for the main dredging plant as well as for most of the auxiliaries.

The dredging power plant consists of a 1200-kilowatt direct current type geared turbine generator set comprising a 1000-kilowatt, 250-volt main generator and a 200-kilowatt, 250-volt auxiliary unit. In addition, there are provided two 75-kilowatt, steam turbine driven generators for supplying small auxiliaries as well as a 15-kilowatt and a 2-kilowatt unit for standby use. The 20-inch dredge pump is driven by a 1200 horsepower Westinghouse motor which is fed from the 1000-kilowatt generator and designed to deliver its full horsepower rating at any speed between 200 and 250 revolutions per minute.

The most interesting feature of this installation is the special control of the dredge pump and its generator. By a special combination in the generator field design, characteristics are provided such as to cause the pump motor to inherently deliver additional power when a plug attempts to form in the discharge line. Thus, the machinery provides for automatically clearing the discharge line under such conditions and restoring normal operation as soon as the difficulty is overcome, without any attention or adjustment by the operator.

The 200-kilowatt generator supplies power to the 225 horsepower cutter motor, and is endowed with characteristics similar to those described for the main generator which feeds the pump motor, so as to limit the maximum torque which can be applied to the cutter machinery.

These dredges are similar in construction to the dredge DUNDEE, which was delivered in 1932, except that the pumping capacity is somewhat greater and electrically driven cutters are used instead of the dust pan type of suction head.

The increased naval building program has resulted in considerable development along electrical lines for naval vessels of all kinds. Most important in this development has been the utilization and application of alternating current equipment to a far greater extent than has ever been attempted before. Because of very stringent weight and space limitations, remarkable progress has been made by the use of structural materials, welding, and aluminum castings in reducing weight and in obtaining the maximum rating in surprisingly small space allotments.

Research work and more scientific use of improved materials have made possible surprising accomplishments, particularly in connection with auxiliary generators and switchboard equipment. Likewise, a great deal of development work has been carried out in the application of alternating current motors and control for the various auxiliary requirements on naval vessels. These developments have brought forth many interesting problems and results indicate that the use of alternating current auxiliary machinery will be greatly extended not only in the navy, but in the merchant marine in the near future.

Prospects for Merchant Work

Looking forward to the year 1934, indications are that, during the first half of the year at least, our major efforts will be required in connection with the large number of vessels to be built for the navy and the coast guard. With the general improvement of business and shipping, it is to be expected that orders will be placed for modern cargo vessels.

(*Continued from Page* 21)

he was succeeded by Capt. Roger Williams who had been operating manager of the International Mercantile Marine Co.

At the time of his death Mr. Palen was vice president and a director of the Newport News Land Corp., an associate member of the American Society of Naval Engineers, past vice president of the National Council of American Shipbuilders, and a member of the Society of Naval Architects and Marine Engineers and the American Bureau of Shipping. Among his clubs were the Bankers' and Engineers' clubs, New York, West Moreland club, Richmond, Va., and the Delta Upsilon fraternity. Surviving him are his wife, the former Miss Lina Livingston Mayo of Richmond, Va.; a son, Frederick P. Palen Jr., New York; a sister, Mrs. Sidney Woods, Ithaca, N. Y.; and a brother, L. S. Palen who lives in France.

New York Barge Canal Has Record Year

The New York State Barge canal completed its record year by floating during the 1933 navigation season a total of 4,074,002 tons. The best previous year was 1931, when 3,722,012 tons were carried. It is an encouraging fact that during the last ten years business on the canal has more than doubled, for in 1923 only 2,006,284 tons were floated.

That the canal has made a record this year is somewhat of a surprise. At the beginning of navigation there was every indication of a large decrease in the usual flow of grain from the west. This prediction, unfortunately, was fulfilled. In 1931 the canal carried 1,209,480 tons of grain, whereas this year only 761,749 tons were carried.

This loss was overcome chiefly by an increase in petroleum products. The amount of such products carried in 1933 was nearly double that carried in 1930. Flour is another commodity which helped to overcome the grain loss. Shipments of flour increased from 2950 tons in 1930 to 106,456 tons in 1933. On the other hand, lumber shipments show the effect of the decrease in building operations. Last season only half as much lumber was carried on the canal as in 1929. There has been a marked reversal in the direction of lumber movements. In years gone by practically all the lumber was moved east from Tonawanda and south through the Champlain canal. Now practically all the movement is toward the west and north, this lumber coming from the Pacific coast via the Panama canal.

During the past four years the movement in drugs and chemicals has increased even more than that of flour and petroleum. In 1930 only 10,481 tons of such products were carried on the canal, as against 244,465 tons in 1933.

Another change in the flow of commodities is indicated by the increased westerly tonnage. In 1924, 60 per cent of the canal tonnage moved east, as against a 40 per cent movement to the west. Last year these percentages were reversed; 60.4 per cent moved west, with 39.6 per cent east-bound.

During the past season, thanks to the efficient management of Ralph Hayes, commissioner of canals and waterways, many favorable comments were received from canal operators. Their words of commendation are borne out by the fact that while the number of collisions between boats slightly increased there were fewer grave accidents and groundings on the canal than ever before.

The legal depth of 12 feet was reestablished early in the season after the usual winter filling, and was steadily maintained until the close of navigation. While the department does not approve such practice, some operators were reckless enough to load boats to a depth of 11 feet, 10 inches. These vessels were able, not however without some difficulty, to pass entirely through the Erie canal.

Mail Pay Investigation

The senate committee investigating mail contracts has continued its hearings during the past month, most of the time having been taken up in questioning representatives of the Dollar Steamship Line and the Lykes Bros.-Ripley Steamship Co. and subsidiaries.

As in previous inquiries the facts concerning payments for ships, construction loans, mail payments, salaries, commissions and dividends, were established in detail.

It is understood that steps are being taken by the committee to ascertain from the shipyards who built vessels for companies holding mail contracts, exactly what financial arrangements were made in regard to the payments of the first 25 per cent of the cost of construction.

Commerce at Los Angeles

The volume of tonnage moving through Los Angeles harbor again is above 1,500,000 tons per month. The preliminary figures for November show that 1,588,733 tons of merchandise were shipped. This is an increase of 130,000 tons over October, and 170,000 tons over the same month a year ago. There is also an increase of $12,000,000 in the value of this commerce over the same period last year; $7,000,000 of this increase was in domestic shipments and the balance in domestic receipts.

Exports to other countries were slightly less than they were a year ago, although imports and also trade with Hawaii showed a gain. The most remarkable increase was in intercoastal shipments, the tonnage to the eastern seaboard being considerably more than doubled because of the resumption of oil shipments through the Panama canal to the Atlantic Coast. This trade also showed an increase of $5,000,000 in value.

Lumber receipts for the month were 34,112,000 board feet, approximately the same as the preceding month, but 3,000,000 more feet than in November a year ago. The total lumber receipts for this year will be approximately 450,000,000 board feet, an increase of nearly 90,000,000 over 1932.

Oil shipments also were up during the month of November, aggregating over 6,662,943 barrels, which was 460,000 barrels more than in October, and 600,000 barrels more than in the same month of last year.

Colombian Line Success in West Indies Service

On Nov. 30, with the sailing of the liner PASTORES from Pier 9, North river, New York, with a big list of passengers for Port au Prince, Haiti; Kingston, Jamaica; Puerto Colombia, Colombia; Cristobal, Panama Canal Zone, the Colombian line completed its first year of regular passenger service.

The success of the first year of operation far exceeded the expectations of the line's officials. Though a new passenger service, the three Colombian liners frequently sail from New York booked to capacity. Judging by advance bookings and inquiries, the company's cruise business will be excellent this winter.

This new American flag passenger service was inaugurated by the new flagship COLOMBIA sailing from New York, Nov. 24, 1932, to the West Indies ports regularly served by this line. The COLOMBIA sailed again on Dec. 15 and was followed in service by a sistership, the HAITI, sailing from New York, Dec. 22, 1932. To round out the line's service, and to provide weekly sailings from New York, the cruise liner PASTORES was chartered from the United Fruit Co. and sailed on the first voyage from New York, Dec. 29, 1932. Throughout the year these three passenger liners held to a clock-like schedule and did not miss a single regular weekly sailing. All told, the three vessels have made 52 sailings from New York in one year of service.

On her initial voyage in 1932, the flagship COLOMBIA established the company's claim of the fastest regular service from New York to Haiti, Jamaica and Colombia by making the run to Port au Prince in three and a half days, to Kingston in four and a half days, and to Puerto Colombia in five days. All three vessels have adhered to this schedule and reached Cristobal in about eight days out of New York.

Heating and Ventilating

The third international heating and ventilating exposition will be held at the Grand Central Palace, New York, Feb. 5 to 9. The exposition will demonstrate that in the past two years many industries have carred on an intensive activity in research and development.

Among features of special interest to the shipping industry will be developments in ventilation and air conditioning. Air conditioning is now seriously being considered for application to passenger ships so that temperature and quality of air may be under control at all times. Uncomfortable heat and poorly conditioned air will not much longer be tolerated on passenger ships.

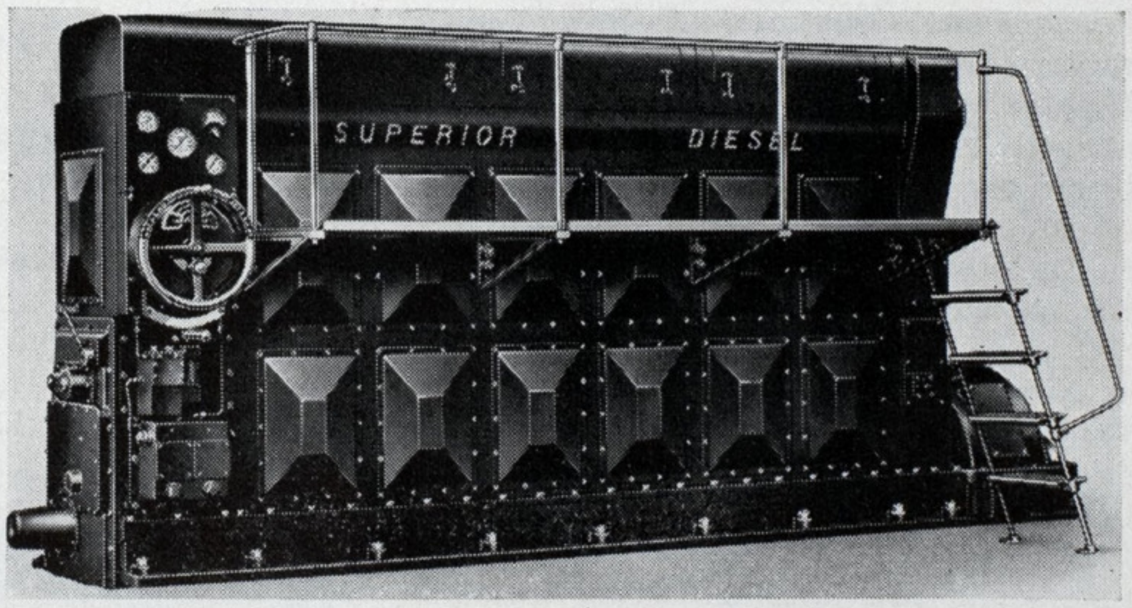
Gloucester Fishing Schooner, Diesel Engine Drive

IN JULY, 1932 Story shipyards, Essex, Mass., completed the wooden fishing schooner SUPERIOR for Capt. J. H. Dahlmer, Gloucester, Mass. This vessel is of heavy construction and measures 108 feet in length between perpendiculars, 19 feet in beam. In operating condition she has a draft of 10 feet. Propelling power is supplied by one Superior diesel engine of 315 brake horsepower at 300 revolutions per minute. Her speed using full power is 10 miles per hour. The fuel consumption is 0.4 pound per brake horsepower per hour and radius without refueling is 2500 miles. This vessel is engaged in sword and mackerel fishing and also in dragging.

The accompanying illustrations show the vessel and the engine. This engine was designed and built by the Superior Engine Co., Springfield, Ohio. It is a 4-cycle, solid injection type, of six cylinders, and develops 315 brake horsepower at 300 revolutions per minute. The bore is 12½ inches and the stroke 15 inches. The engine is of rugged construction and was designed for heavy duty and continuous service. Horsepower ratings are based on 75 pounds mean effective pressure which gives a considerable emergency overload capacity. It is direct reversing.

Starting, stopping and reversing the engine is accomplished by a single handwheel. Quick acceleration, with governor control, is possible at all speeds. One of the features of this type of engine is that it is entirely enclosed, including the flywheel, and is therefore dust-proof and oil tight. All vital parts are readily accessible. The lubricating system is of the force feed type.

The average compression pressure in this engine is 400 pounds per square inch while the firing pressure does not exceed 600 pounds at rated loads and speeds. Length of the engine overall is 19 feet, 9 inches; height overall, is 8 feet, 2½ inches, and the width overall is 3 feet, 8 inches. The weight is 38,000 pounds, which is equivalent to 126.6 pounds per brake horsepower. The air compressor for compressed air for maneuvering is driven from the main engine. The engine is connected to the propeller shaft by means of a sliding clutch. There is a 5 kilowatt independent generator for lighting purposes.



Four cycle, single acting, solid injection, six cylinder Superior diesel engine of 315 b.h.p. at 300 r.p.m. installed in fishing schooner Superior

Gloucester fishing schooner Superior built at Story shipyards, Essex, Mass., for Capt. J. H. Dahlmer. This vessel is fitted with one 315 horsepower diesel engine of the type shown above

Award Contract for Tender

As reported in the December issue of MARINE REVIEW the Manitowoc Shipbuilding Corp., Manitowoc, Wis., submitted a low bid of $236,417 for building the lighthouse tender TAMARACK. The Berg Shipbuilding Co., Seattle, Wash., submitted a low bid of $377,000 for building the lighthouse tender HOLLYHOCK.

On Dec. 13 the lighthouse service announced award of contract for the construction of the new diesel electric lighthouse tender TAMARACK to the Manitowoc Shipbuilding Corp., Manitowoc, Wis. on its low bid, the construction price being $233,917, including machinery. Construction is to begin immediately, and the terms of the contract call for the delivery of the vessel in Detroit, Mich., within 300 days.

In the TAMARACK, diesel engines will drive electric generators, furnishing current for the electric motor which will drive the propeller. This type of drive has been selected as providing suitable flexibility for working round buoys and when encountering ice. Funds for the construction of the TAMARACK were provided by the Public Works administration.

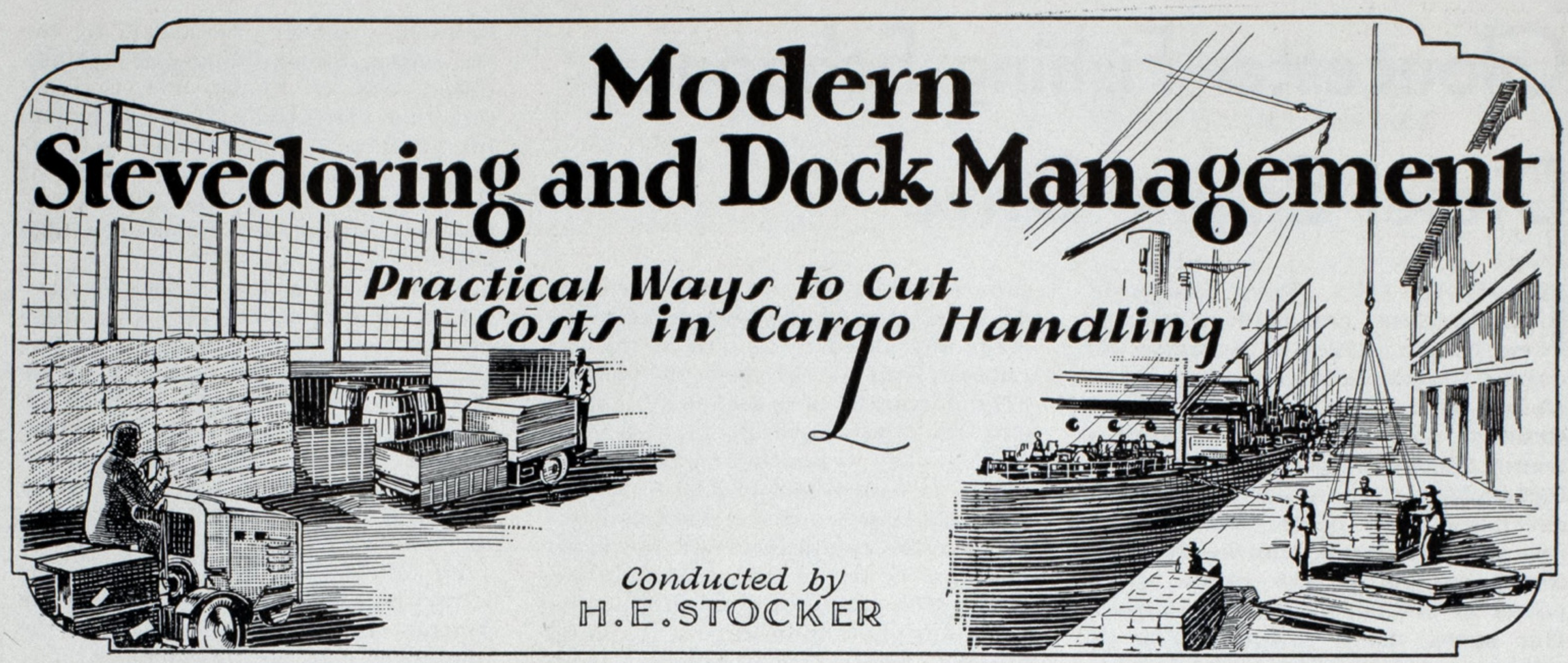
No information is available as this is written regarding the award of a contract for the construction of the lighthouse tender HOLLYHOCK.

Fiftieth Trip to Coast

On Nov. 27 the S. S. CALIFORNIA of the Pacific Mail Line sailed from New York, beginning her fiftieth voyage to California ports since January, 1928 when she sailed on her maiden voyage in that service. During this period she has carried approximately 50,000 passengers between New York and California ports.

Service of the Panama Pacific line, via the Panama canal, from New York to California ports, was inaugurated with the S. S. KROONLAND and FINLAND in 1915. It was interrupted by the war, but was resumed again in 1923. This service was vastly improved by the addition in 1928 of the fine turbine electric liner CALIFORNIA and in the following year by her sisterships the VIRGINIA and PENNSYLVANIA. These three vessels were the first of the splendidly equipped, efficient, modern passenger and cargo liners built in American shipyards during the last six years.

It is interesting to note that since this service was commenced in 1915, a total of 232 voyages in the intercoastal trade have been made by vessels of the Panama Pacific line. A total of 203,862 passengers have been carried in this time, an average of 880 passengers on each voyage.



Cargo Handling Executive is Needed for Efficient Terminal Operation

By H. E. Stocker

IT IS not sound to standardize on any one type of mechanical equipment to the exclusion of all others. Skids and lift trucks, tractors and trailers, fork trucks and pallets, conveyors, and two wheel hand trucks each perform certain operations more economically than any other type of equipment. In planning the operations of a terminal all types can profitably be considered and purchases be made on the facts determined as to the best known method of performing each operation on the terminal.

A general cargo handling operation is very complex; there are a large variety of operations performed and conditions are changing from day to day and hour to hour. Yet with all this complexity, the majority of the operations are similar to operations performed on some other terminals. By analyzing these operations thoroughly profitable knowledge is obtained.

Equipment Hastily Selected

In one case a large investment was made in an excellent type of equipment which is economical, however, only when used in conjunction with another type of equipment. One of the executives of the steamship company saw an operation using the first type of equipment and immediately wanted to use it on all his terminals without making certain that this was the one best method for the particular conditions existing on the terminals of his company.

Simple purchase of mechanical equipment is not sufficient to get the best results. The method of using the equipment is important. This involves both the plan of operation, the organization set up and the management policies.

Economical Cargo Handling

In another case a large investment in equipment resulted in an increased cost per ton. This was because the equipment was not suited for the conditions on the terminal and the management did not have sufficient understanding of the fundamentals of economical cargo handling to make the best use of the equipment. In some instances a carefully worked out method utilizing hand trucks, directed by an organization well planned and governed by sound management policies is more economical than providing expensive mechanical equipment which is not used properly. In terminal operation organization and management are of supreme importance.

A New York shipping company operating a large terminal, has as the chief executive in charge of cargo handling a man whose principal experience has been in accounting and finance. He is a man of high ability and is naturally clear headed. Consequently he has accomplished some excellent improvements in the cargo handling operation. However, because of his other duties, and his lack of experience in cargo handling, there is much which still could be done to reduce costs. Furthermore, the speed with which he has obtained results has been disappointing. Because of his lack of experience, it took him months to bring about faster handling of one commodity by using a different type sling. He did not know at the very start of his attempt to solve the problem that a certain type sling was used successfully in handling the same cargo at the loading ports.

On some terminals with which the author is familiar, the chief deficiency is the lack of proper coordination of the pier organization of the steamship company, and the organization of the contracting stevedore who is loading and discharging the ships. Cargo is unloaded from trucks to the pier without much if any consideration of the next step of picking up the cargo and taking it upon the ship.

Co-operating With the Stevedores

The pier superintendent does not facilitate the whole operation by putting one or two men in a motor truck when cargo is being handled direct from the motor truck to the ship. The pier superintendent saves one or two men but the stevedore has to use one or two additional men or allow the operation to progress at a slower speed than if an adequate number of men were used. It is true that the pier superintendent's weekly cost per ton is lower under the above arrangement, but ultimately at least that which is saved in pier costs and more is added to stevedoring costs, with resultant loss to the steamship company in the final analysis.

The point of view of one of the best

pier superintendents I know is antagonistic to the contracting stevedore. He is disinclined to work closely with the stevedore so that there will be the minimum of handling of the cargo and the whole operation on the pier and in the ship may be coordinated and thus, *all* costs, pier and stevedore and ship's time will be reduced to a minimum.

It is true that the stevedore works on fixed rates per ton of cargo handled. However, as anyone knows who has worked with contracting stevedores anything which increases the stevedore's costs, eventually results in increasing the stevedore's rates for loading and discharging. If the stevedore's rates result in an average for loading and discharging of $1 a ton, and if the pier costs are 25 cents a ton, the total cargo handling costs exclusive of pier rental or wharfage amounts to $1.25 a ton. This figure is the important one; keeping the pier figure to 25 cents, by increasing the stevedore's work, may look fine to the pier superintendent but it is bad for the company because the rates are higher by approximately the amount that the pier costs are lower. The only exception would be a case where the rates were exorbitant and to my knowledge this has existed only where there were certain monopolistic features in the arrangement between the steamship company and the stevedore.

The difficulties described would be corrected materially if the steamship company had a cargo handling executive, responsible for the stevedoring costs as well as the pier costs. He should be the one to negotiate the contract with the stevedore and not a higher executive who has not the time to give the matter proper attention.

A Cargo Handling Executive

The objective of economical operation is achieved by means of a cargo handling executive with breadth of experience sufficient to prevent too narrow a point of view which is usually accompanied by a passionate defense of one particular method. If a man can be obtained with these qualifications, and then given a free rein to devote *all* his time to the supervision of cargo handling he will be a money maker for the company.

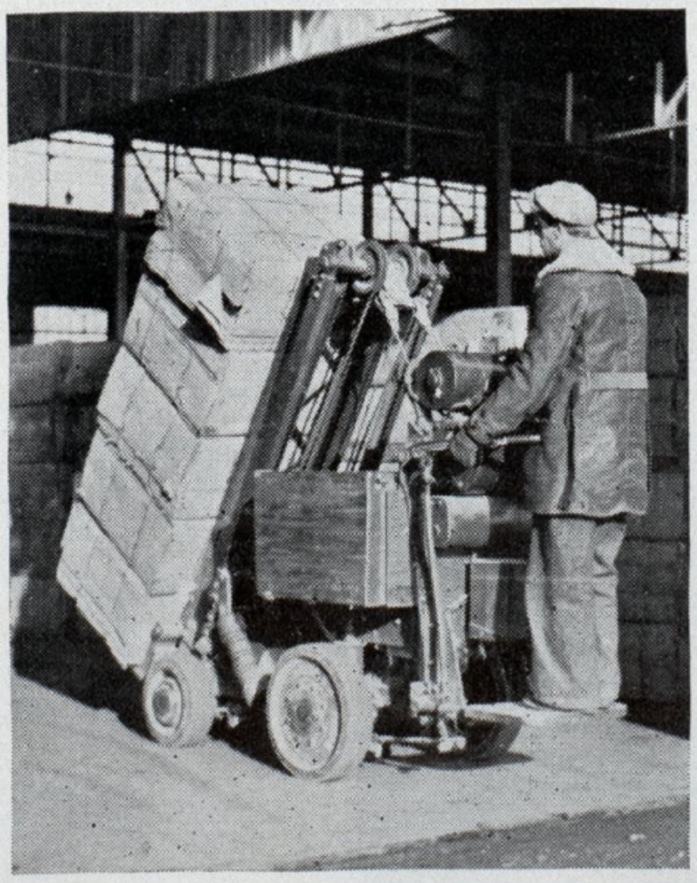
In the case referred too first, the executive had a multitude of duties; cargo handling being among the least. He had not had any direct experience in this important part of shipping and yet because he was a top executive, made decisions on this technical subject. The right kinds of cargo handling executive in this company could cut costs around $100,000 a year by coordination of the operations at all the ports served, and by selection of mechanical equipment on basis of a thorough analysis of the particular requirements necessitated by the operations of the company.

Small organizations are more effective than large ones because they are more flexible. Adjustments may be made to meet changing conditions quicker than in a large unwieldy organization, and most large organizations are unwieldy unless the organization is so planned that authority is decentralized. The best example the author knows of, showing the inefficiency of a highly centralized organization, is the delay of a whole day of a 9600-ton deadweight freighter in a Cuban port because authority to work overtime had to be obtained by cable from New York. By the time the cable had been coded, transmitted, decoded, 'phoned to the chief executive of the company (who does not come in to the office Saturdays) and an answer coded, transmitted, and decoded it was too late to work the necessary overtime, and the ship lost a day which might just as well have been spent at sea.

The rapidly changing conditions experienced in the past three years have brought out so sharply the deficiencies of large organizations that General Foods, United States Steel and other large companies are remodeling their organizations by decentralizing authority. Henry Ford is an advocate of decentralizing manufacturing wherever feasible by having different parts manufactured in a large number of small plants.

The creation of the position of cargo handling executive is a decentralization move and is essentially sound for the same reason that the decentralization of General Foods and other large organizations is sound. It places men closer to their jobs, it provides for a closer supervision of the important function of cargo handling by a man especially fitted for this job.

The REX of the Italian Line arrived in New York Dec. 7 from Genoa, Villefranche, Naples and Gibraltar bringing 941 passengers.



Electric diesel truck handling woodpulp at Portland, Me.

U. S. Merchant Vessels, Government Record

The 1933 edition of the government publication *Merchant Vessels in the United States*, popularly referred to as "The Blue Book of American Shipping," has been released by Assistant Director A. J. Tyrer of the commerce department, bureau of navigation and steamboat inspection.

The new volume contains the name of every documented merchant vessel and yacht of 5 net tons and over in the United States, approximately 29,000, with such descriptive data as each vessel's official number, gross and net tonnage, dimensions, materials, horsepower, homeport, year and place of building, service, and number of men in the crew, together with the name and address of the owner.

Steam, motor, sail, unrigged vessels, and yachts are listed separately, in the alphabetical order of their names. The type of engine, and kind of fuel used by the steam and motor vessels are indicated. Vessels equipped with radio transmitting apparatus or radio compass, or both, are marked, as are those which are classed by the American Bureau of Shipping.

All Shipyards Are Listed

All shipyards building vessels of 100 gross tons and over, since 1900, are listed with the names and description of the vessels built by them during that period. There is also a register of owners of vessels of 100 gross tons and over with the name and other pertinent information concerning each vessel of that class owned by them.

There are complete lists of oil burning steamers, vessels measured under Panama and Suez canal rules, vessels belonging to the navy, war, treasury, commerce, labor, interior and agricultural departments, the Panama canal and Panama Railroad Co., and vessels owned in the Philippine islands.

As the result of the international radio conference in 1927, the principal maritime nations of the world have joined in the adoption of a uniform radio call and visual signal system, effective Jan. 1, 1934, which system involves the use of one set of letters to represent both the visual and radio call letters on each vessel. This edition of *Merchant Vessels of the United States* lists these new letters at this time.

Directs Welfare Activities

Kermit Roosevelt, son of the late President Theodore Roosevelt and president of the Roosevelt Steamship Inc., has accepted the chairmanship of the maritime division for participation in the citizens family welfare activities among the unemployed.

Modern Equipment Used on Detroit Harbor Terminal

THE Detroit Harbor Terminal is equipped to load and unload all types of bulk and package freight. In the latter class the list includes anything that can be loaded onto a hand truck, from Milwaukee-made beer to California-packed canned goods.

Cranes are used in handling sugar, woodpulp, newsprint paper, steel, pig iron, bulk chemicals, scrap paper, scrap metals, boxed automobiles and other commodities to which this type of equipment is suited.

These electric cranes are self-propelled and can be placed in service at any point on the dock, which is 1400 feet in length.

In addition there are two locomotive steam cranes, operating on the wharf tracks as well as in a 12-acre storage yard, and two gasoline-propelled cranes of the caterpillar type. These four cranes range from 10 to 35 tons capacity and have booms varying in length from 40 to 70 feet. They are used for sugar, baled woodpulp and various other commodities.

Direct from Ship to Truck

It may be interesting to note that twenty-five 100-pound bags of sugar, or six bales of woodpulp, each bale approximating 400 pounds, may be lifted from the ship's hold and set down directly upon a four-wheel truck for transfer to cars or warehouse, without having touched the dock. In these operations a skip is used for the sugar and a general clamp hook for woodpulp. This hook is designed according to the terminal companies own specifications and does not injure the pulp in any way.

Three portable ramps, for loading automobiles and trucks under their own power, are also in service.

The terminal facilities include a modern general and cold storage warehouse of 7,500,000 cubic feet capacity, a marine warehouse and the large storage yard mentioned above. Since each type freight usually is moved between vessel and a given one of these points, a section of the dock is segregated for loading and unloading each class of cargo. Occasional exceptions are necessary, of course, but in ordinary practice it is found this arrangement saves time and promotes efficiency. In case of freight transferred directly between vessel and railroad cars the cars are spotted according to the same plan.

Traffic over the terminal is increasing steadily, having equalled that of 1929 in the months of May, June and July of 1933.

Lines Using the Terminal

Among the lines using the dock are the Minnesota-Atlantic Transit Co., Great Lakes Transit Corp., Seaboard-Great Lakes Corp., National Motorship Corp., Tree Line Navigation Co., Colombian Steamship Co., Canada Steamship lines and others. Many foreign ships, directly from overseas ports, also call at the terminal.

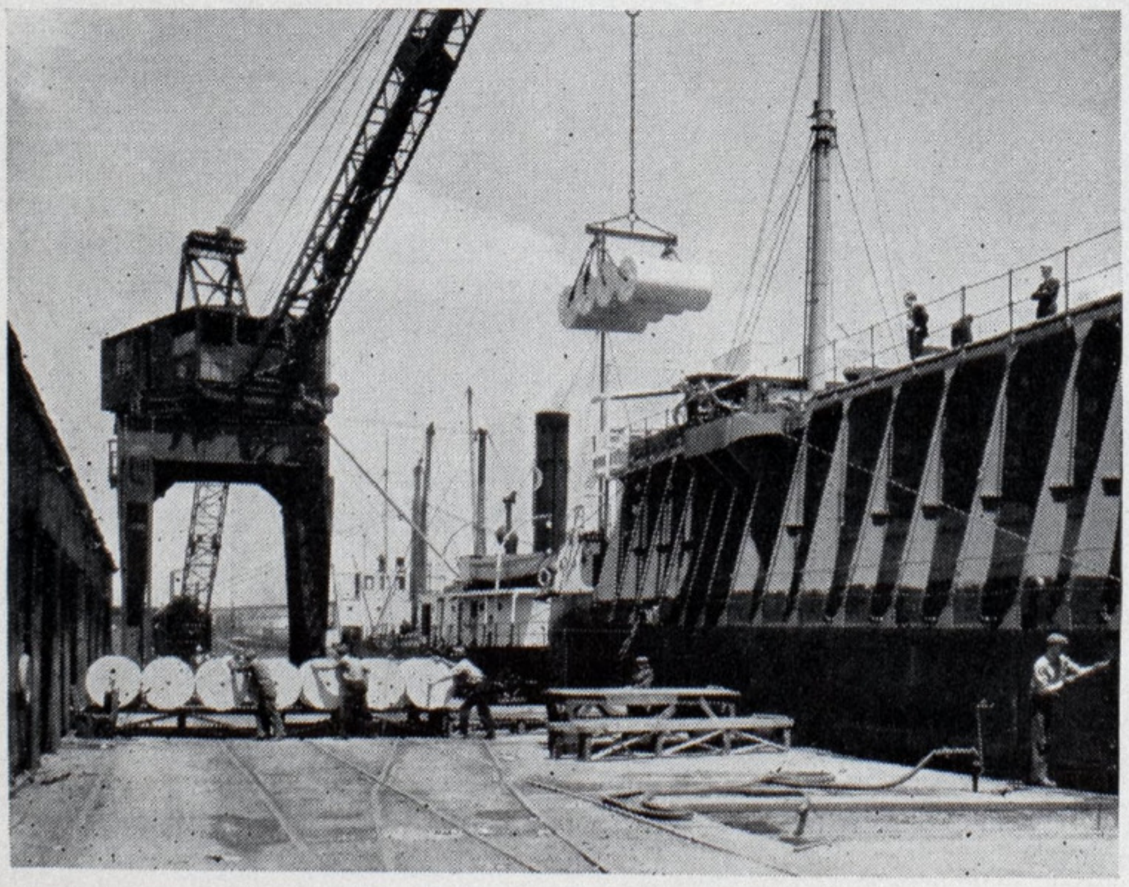
Flash and Fire Points

Because of the confusion frequently existing as to the meaning of "flash point" and "fire point" of a petroleum product, it is interesting to quote in part from an article on this subject appearing in the Texas Co.'s publication *Lubrication* for November, 1933.

"When the temperature of a petroleum product is gradually raised, a point will be reached where enough surface vapor is developed to ignite for a moment upon the application of a flame. The temperature of the oil at the moment of flash is regarded as the flash point of the product under test.

"After having reached the temperature of the flash point continued heating, until the oil ignites and continues to burn for a period of at least five seconds, gives the temperature which is recorded as the fire point."

Definite instructions are given by various organizations including the American Society for Testing Materials as to the procedure to be followed in the tests to determine flash and fire points.



Gantry crane at the Detroit Harbor Terminal discharging newsprint paper from ship designed especially for handling this kind of cargo

On Checking Corrosion

It is generally recognized that in the shipping industry rust and corrosion are a constant concern of the owner and operator in safeguarding ships and equipment from rapid deterioration. Everything that bears on this problem in an authoritative manner is therefore of interest to the marine industry.

In this connection the Dearborn Chemical Co., Chicago, has just published a book of real educational value in outlining specific methods for protecting iron and steel from rust. Numerous cases are pointed out where proper protection has preserved steel equipment for many extra years of service. These examples will be of special interest to those responsible for the maintenance and proper upkeep of floating property.

Copies of this book may be obtained by addressing, Department 0-2, Dearborn Chemical Co., 310 South Michigan avenue, Chicago.

Elevator for Normandie

A special automobile elevator, the largest and most unusual ever projected for ship use, is being built by Otis-Pifre in Paris for the new French liner NORMANDIE, the 72,000-ton ship that will go into service in 1935, according to the international division of the Otis Elevator Co.

With a lifting capacity of 11,000 pounds, the elevator will be by far the heaviest duty elevator ever to be installed in a commercial ship. In addition it will have a radically new feature in a turntable that will permit the easy storing of automobiles in the hold. This turntable will be manually controlled and will operate on the 22-foot long elevator platform.

The automobile elevator will have a speed of 100 feet a minute, and will have the same features as modern building elevators, micro self leveling and automatic push button control.

Useful Hints on Cargo Handling

WHEN starting an investigation of a problem it is likely to be a costly mistake to neglect to find out what others have done in connection with the same problem. The very essence of scientific management is to avoid waste of time, money and effort by ascertaining the experience of others and carrying on further investigation from that point. Self sufficiency may have been all right in the pioneering era of American economic life, but present day conditions demand the coordination of effort and the interchange of information and ideas. In every business a margin has been found between the earnings of ordinary management and scientific management.

In one case, stating it conservatively, net earnings could be increased sufficiently to pay the entire capital charges of interest and amortization by utilizing the scientific method, in part only, in managing the traffic and cargo handling of the business. What it amounts to in this case is simply making a thorough analysis to get the facts and then basing decisions upon these "real" facts rather than depending on guesses and opinion. The facts thus ascertained would be applied by an efficient organization and management developed in the same analytical way.

There is no logical objection to the use of this method. Opposition is found because its proponents are frequently lacking in an understanding of its practical application and practical executives are lacking in knowledge of the details of the method. This section strives to combine both the theoretical and practical aspects of a problem.

Double Hatch Boards

THE following method for construction of double hatch boards is suggested by the accident prevention department of Pacific American Steamship association: Stock to be 3 inches thick sized both sides, fastened together with one-half inch iron tie-rods placed 6 inches from the ends of the cover and one or more in the center of the board if required. Rods are to be fitted with washers and riveted on both ends; ends of boards to be strapped with a strip of No. 22 gage galvanized iron 4 inches wide starting 1 inch from the end of the board.

THIS page is being devoted to short items on all matters having to do with the more efficient turnaround of ships. These items are intended to be of a helpful nature.

We will welcome for this page brief descriptions, illustrated if possible, of any better or safer way of performing any function in cargo handling. Also, any questions submitted will be answered by the editor.

Hand-holes 4½ inches in diameter by 1¾ inches deep, are to be placed not less than 10 inches and not more than 12 inches centers from the end of the board and fitted with a handgrip of 5/16 x 1¼ x 7 inches galvanized half round iron, secured by two 5/16 x 2½-inch tire bolts counter sunk and riveted. One handhold is to be placed in each board at opposite ends and sides.

Paper Shipped on Skids

A FLAT stock printing paper company advises that they sell case paper at list. Where a customer will allow shipment of 3000 pounds or over, skidded, they make an allowance of 15 cents a hundredweight, or $4.50 for the minimum load of 3000 pounds.

It is said that this saving of 15 cents per hundredweight represented about one-third of the total savings to the printer as the paper arrived in better condition—no wrinkled sheets at the top and bottom of the case had to be thrown out—the paper was ready for feeding to the press immediately upon removing the wrapping, and the paper did not have to be handled out of the cases which always resulted in some damage.

A successful experiment was completed recently by an intercoastal line in the use of dry ice for refrigerating cargo.

On Using Equipment

ONE large company has a miscellaneous collection of equipment on one of its large terminals. Some of it is admirably suited to the conditions, but some of it is entirely unsuited. Money would be saved by giving it away.

Some of this accumulation of equipment is the result of a lack of organization stability and now that the organization plan is settled the purchases are not suitable because there is not one person in the organization with the understanding of the fundamentals of cargo handling and sufficient background of experience.

Expenditures Justified

THE scientific method can be of material aid in achieving the fundamental goal of business, because an essential of this method is the contemplation of the whole situation, while not overlooking details. Every dollar expended in the way of a capital investment, and every dollar expended for operating expenses is expended with the objective of obtaining the maximum net profit for the company.

A man untrained in the scientific method, will, regardless of the amount of his common sense, miss opportunities for profit because no one is broad enough to know all the methods and principles of the scientific method without training.

Cleaning deep tanks for carriage of bulk oil is often difficult. One line has found that by dumping kerosene into the tank and then steaming it, the cleaning is greatly facilitated.

Bales of compressed cotton stow 21 cubic feet to the bale in single deck ships and 22 cubic feet to the ton in 'tweendeck ships.

Standard Turnbuckles

SIMPLIFIED practice recommendation, covering turnbuckles, has been reaffirmed, without change, by the standing committee of the industry, according to an announcement by the division of simplified practice of the bureau of standards.

This recommendation, which was proposed and developed by the industry, covers the diameter and the opening (in inches), of turnbuckles with and without stubs, and of turnbuckles with hook, eye and jaw ends.

This program, as originally made effective in 1928, recommended a reduction in the number of stock sizes of turnbuckles, from 248 to 115.

Up and Down the Great Lakes

Status of Code—Final Ore Shipments—Lake Levels —Grain—Coal Movement—Propeller Club Meets

REFERRING to the status of a code for shipping on the Great Lakes; no change has occurred, up to the time this is written, since the statement issued by the Lake Carriers' association on Dec. 1. This statement was as follows:

"The shipping code for the Great Lakes was up for hearing before William H. Davis, deputy administrator for NRA., on Nov. 28, in Washington. Representatives of the various interests involved were given opportunity to discuss all of the features of the code, which has been in the hands of the administrator since Oct. 23. The code has been taken under consideration by the administrator and his advisers, but a decision has not yet been reached upon the form in which it will finally emerge from NRA headquarters.

"The Lake Carriers' association in endeavoring to formulate a procedure for collective bargaining with the men on the vessels in its membership, had expected to make announcement of these plans today. As the terms of the code are still unknown, it has been found impossible to do so.

"It is hoped by the Lake Carriers' association that final action may be taken by the administrator so that announcement may be made on Jan. 2, 1934. Seamen of Lake Carriers' vessels are requested to read newspapers of that date for further announcement."

Ore Shipments Complete

During November, 1933, and including 5938 tons shipped in December, shipments of ore from upper lake ports amounted to 784,815 gross tons as compared with 250,310 tons for the month of November to end of the season 1932.

The figures for the total movement of ore to the end of the season 1933 can now be given and are 21,623,898 gross tons (2240 pounds per ton). This compares with a total movement of ore for the season of 1932 of 3,567,985 gross tons.

Balance of ore on docks at Lake Erie ports on Dec. 1, 1933 amounted to 5,405,691 tons as compared with 5,191,114 tons Dec. 1, 1932.

The total ore movement of this year, though less than for the year 1931, compares quite favorably. In that year a total of 23,467,786 gross tons of ore were moved, as compared with 21,623,898 gross tons for the season of 1933. The movement in 1933, however, was considerably less than half of the movement of ore in the season of 1930 when 46,582,982 tons were moved.

All thoughts are now turned to the possibility for the season of 1934. It is generally anticipated at this time that the movement in 1934 is likely to be greater than for the present year. To what extent this will be so, must depend on the continued recovery in business.

November Lake Levels

The United States Lake survey reports the following monthly mean stages of the Great Lakes for the month of November, 1933, determined from daily readings of staff gages.

Lakes	Feet above mean sea level
Superior	602.81
Michigan-Huron	577.71
St. Clair	573.26
Erie	570.18
Ontario	243.43

Lake Superior was 0.04 foot lower than in October and it was 0.34 foot above the November stage a year ago.

Lakes Michigan-Huron were 0.14 foot lower than in October and they were 0.21 foot below the November stage of a year ago.

Lake Erie was 0.41 foot lower than in October and it was 0.36 foot below the November stage of a year ago.

Lake Ontario was 0.42 foot lower than in October and it was 0.95 foot below the November stage of a year ago, 1.57 feet below the average stage of November, of the last ten years.

Canadian Grain Shipments

The board of grain commissioners of Canada, Fort William, Ont., on Dec. 9 issued a statement subject to revision, on the total movement of grain from Fort William and Port Arthur, Ont., for the season of navigation of 1933. A total of 114,415,463 bushels of wheat moved to Canadian ports, of which amount 80,132,301 bushels went to Canadian lower lake ports and 26,607,197 bushels to Montreal; the remainder being divided between Quebec and Soral. The movement of wheat to Buffalo was 35,975,145 bushels and to other United States ports 4,401,346 bushels, making a total to United States ports of 40,376,492 bushels. Wheat direct to Europe totaled 170,777 bushels; making a grand total for the season of 1933 of 154,962,732 bushels of wheat.

The movement of oats amounted to 12,120,998 bushels, all going to Canadian ports, 10,356,141 bushels of this amount being shipped to Canadian lower lake ports. The movement of barley amounted to 4,075,822 bushels all going to Canadian ports, 3,194,063 bushels of this amount going to lower lake ports.

Flaxseed in the amount of 631,598 bushels went to Canadian ports and 565,116 bushels to American ports, making a total movement in flaxseed of 1,196,715 bushels.

The preponderance of rye was shipped to American ports amounting to 2,037,458 bushels whereas only 182,796 bushels went to Canadian ports. Of the grand total movement of barley malt amounting to 28,716,260 bushels no less than 18,001,470 bushels were shipped to American ports while 10,714,790 bushels went to Canadian ports. Of the movement in screenings, 16,641 tons went to Canadian ports and 25,585 tons were shipped to American ports making a grand total movement of 42,226 tons of this commodity.

Shipping circles on the Great Lakes are unanimous in approval of the selection of Capt. R. W. England, chairman of the shore captains' committee and a director of the Lake Carriers' association, as advisor to deputy administrator, W. H. Davis, who is in charge of the hearings on a shipping code for the Great Lakes under the national industrial recovery act.

The steamer MARTIN MULLEN, of the Pioneer Steamship Co., operated by Hutchinson & Co., had the honor of officially closing the ore shipping season on the Great Lakes when she docked at Cleveland Dec. 5, with the only cargo of ore shipped in the month of December. She brought in 5938 tons of ore taken on at Escanaba.

Early in December the number of freighters holding grain in Buffalo harbor totaled 68 as compared with 64 vessels in the winter grain fleet last year.

Sophia Steinbrenner Dies, Long Active in Shipping

Mrs. Sophia Steinbrenner, 79, president of the Kinsman Transit Co., died suddenly at her home in Cleveland, Dec. 12. She was the daughter of Philip and Anna C. Minch, who came to this country from Germany in 1840, and settled at Vermilion, O. Her father became interested in lake shipping and in 1842 started the forerunner of the present fleet.

Capt. Philip Minch died in 1887, and his widow continued to manage the fleet until her death in 1905, when Henry Steinbrenner, who had married their daughter, became manager. Henry Steinbrenner died in 1929, and since then the company has been managed by his son, George M. Steinbrenner.

Throughout her long life Mrs. Steinbrenner was intimately associated with lake shipping. As a girl she spent much time aboard her father's vessels. She retained until the very end her active interest and participation in shipping affairs, and seldom missed an annual trip on the lakes.

Many interesting and some tragic incidents in connection with lake shipping are associated with her career. In 1884 the large schooner SOPHIA MINCH, named for her by her father, was blown ashore during a gale at Cleveland. Many Clevelanders still remember the heroic endeavors to stop the schooner from becoming beached.

At a time when steel vessels were first projected for the lakes, Mrs. Steinbrenner's mother built the big steamer WESTERN RESERVE. On Lake Superior, Aug. 30, 1892, this vessel broke in two, and all on board, save one man, were lost. Her brother, Capt. Peter Minch and his family were lost in the disaster.

Again, on Lake Superior, Sept. 15, 1915, the steamer ONOKO sank with no loss of life. This vessel was especially significant in the development of lake shipping. Built for Mrs. Steinbrenner's father in 1882, the ONOKO was the first iron vessel of the present type bulk cargo carrier to sail the lakes.

Vessels and schooners which have comprised the fleet in the past are as follows:

Schooners and Wooden Steamers

Schooners, LINDEN, C. J. ROEDER, BURTON PARSONS, J. W. NICHOLAS, CHARLES P. MINCH, EMMA C. COHEN, H. J. WEBB, SAMUEL MATHER, FRED A. MORSE, GEORGE H. WARMINGTON, SOPHIA MINCH, ABERDEEN, and DUNDEE.

Steamers, JOHN N. GLIDDEN, A. EVERETT, WILLIAM CHISHOLM, J. H. DEVEREAUX, PHILIP MINCH, HORACE A. TUTTLE, and J. H. WADE.

Steam Steel Vessels

ONOKO, WESTERN RESERVE, I. W. NICHOLAS, and ANNA C. MINCH.

The present fleet of today consists of the following Kinsman Transit Co. vessels: GEORGE M. HUMPHREY, HARRY L. FINDLAY, WORRELL CLARKSON, PHILIP MINCH, and HENRY STEINBRENNER.

The steamers GEORGE M. HUMPHREY and WORRELL CLARKSON are 600-foot vessels, and are among the largest on the lakes.

Coal Movement Up

Coal shipments from Lake Erie ports for the season of 1933 are substantially greater than those for 1932 and are somewhat in excess of those for 1931. The falling off in shipping toward the end of the season is reflected in the weekly average for the four weeks beginning Nov. 20 and ending Dec. 18 which was 402,122 tons.

The total cargo movement in coal for the present season up to Dec. 18 amounted to 31,255,689 tons as compared with 24,482,871 tons for the corresponding period in 1932. This is for cargo coal alone.

In addition to cargo coal vessels continued to move greater quantities of bunker coal. The total for this season up to Dec. 18 was 979,054 tons, compared with 608,452 tons for the corresponding period of 1932.

The total coal movement, cargo and bunker, for the season 1933 to Dec. 18 was 32,234,743 tons as compared with 25,091,323 tons for the corresponding period of 1932, and 31,385,-931 tons for the same period in the season of 1931.

From these figures it is clear that the coal movement during the season of 1933 not only greatly exceeds that for the year 1932 but is also slightly over the movement for 1931. It is, however, 5,922,629 tons less than the same period in the season of 1930.

The figures given above are nearly complete for the season as only a comparatively small movement is expected after Dec. 18.

New Association Formed

The Gas Powered Industrial Truck association has been organized with the following officers: president, Ezra W. Clark, vice president, Clark Truck-tractor Co., Battle Creek, Mich.; vice president, L. J. Kline, general manager, Mercury Mfg. Co., Chicago; secretary-treasurer, John A. Cronin, 60 East Forty-second street, New York City.

The directors include the president and vice president and the following: D. H. Ross, Ross Carrier Co., Benton Harbor, Mich.; R. C. Howell, Howell Industrial Truck Co., Cleveland; and W. F. Hebard, W. F. Hebard Co., Chicago.

A code of fair practice has been adopted and has been filed in Washington. The association has been elected to membership in the Machinery and Allied Products Institute.

Coast Guard Instructions For Vessels in Distress

The United States coast guard being vitally interested in promoting safety of life at sea recommends that radio equipped vessels when in distress transmit their messages giving all information, leaving no doubt as to what the trouble may be and the position. A vessel in distress should not fail to transmit her own ship's call repeatedly so that direction finding equipment may be used, permitting assistance to come without difficulty and delay.

The following instructions are issued for the guidance of all vessels when another is in distress:

1. Give absolute priority to distress calls and messages relating thereto.
2. Cease all transmissions likely to interfere with the conduct of distress communications.
3. Maintain absolute silence if within range and not actually taking part in the conduct of distress communications.
4. Concentrate attention on the distress case and intercept all information possible.
5. If unquestionably in vicinity of distressed vessel, acknowledge receipt of the distress message, if received, giving your position to the vessel in distress, and stating action you are taking.
6. Be extremely careful not to interfere with stations more favorably situated to handle the case.
7. Do not try to silence other units, that is "QRT" unless you are in control.

Permit the vessel in distress to handle the situation without interference. The vessel in distress may delegate this control to some other station more favorably situated. Do not interfere with the station lawfully controlling the situation.

In minor cases of distress or other trouble use the urgent signal "XXX," or the general call "NCU" for any coast guard unit.

Propeller Club Meeting

The Propeller club, port of Cleveland, held a luncheon meeting on Dec. 14 at the Hollenden hotel. A. B. Kern, past president of the club presided and introduced the speaker, David S. Ingalls, former assistant secretary of the navy, for aviation.

In a resolution presented by Capt. R. W. England, manager of the Interstate Steamship Co. vigorous exception was taken to the proposed consolidation of the coast guard service with the United States navy. It was pointed out that should such a consolidation become effective, the Great Lakes might lose the services of the fine new cutter ESCANABA, and others to be

(*Continued on Page* 38)

Diesel Geared Drive Fitted in Tugboat Dandy

ONE of the functions of gear as well as electrical transmission of power from the main propelling unit to the propeller shaft is to allow both the engine designer and the propeller designer a free hand in arriving at maximum efficiency. The speeds of the propeller and of the engine, in such cases, may be selected for best results.

In converting the former steam tug DANDY into diesel drive, the Townsend Petroleum Transportation Co., Bayonne, N. J., through its president, Capt. J. H. Townsend, selected a four-cycle, six-cylinder, solid injection, single acting Cooper-Bessemer diesel engine developing 360 brake horsepower at 360 revolutions. In order to give lower revolutions to the propeller without sacrifice of appreciable power, it was decided to install a Farrell-Birmingham reduction gear having a ratio of 1.8 to 1.

The engine and the gear are incorporated as an integral unit on a specially fabricated steel frame in order to insure perfect alignment. Though the engine turns at 360 revolutions per minute to develop its full horsepower of 360, practically all of this power is delivered to the propeller shaft at 200 revolutions per minute.

Hawser Pull Is Increased

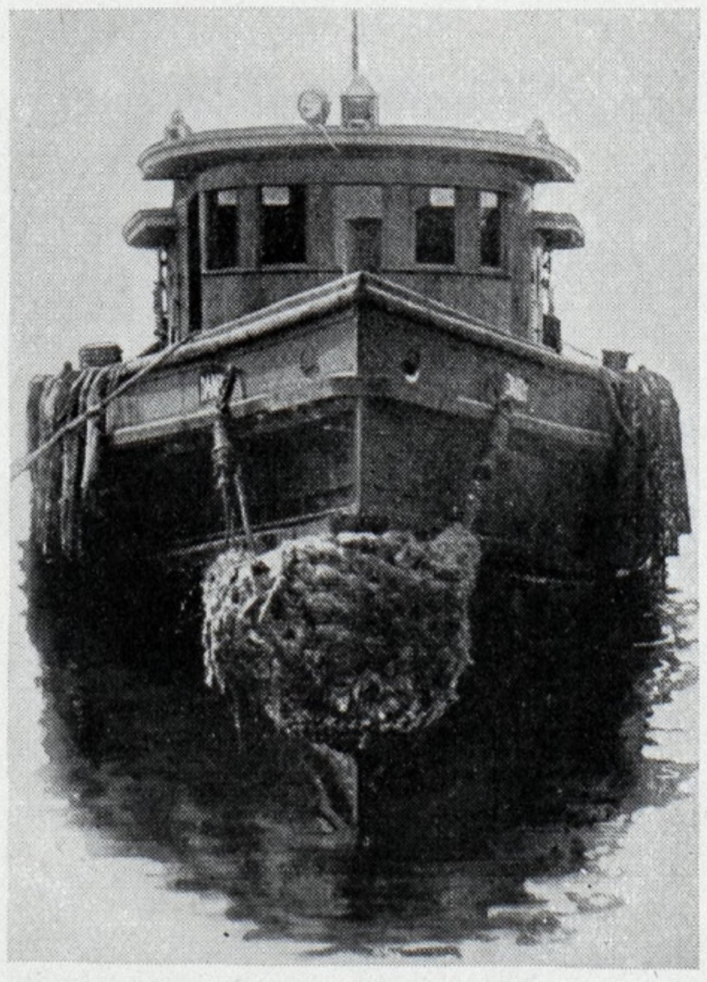
By this arrangement a hawser pull and maneuverability equal to that obtained with a much larger engine is possible. Trials of the completed vessel were entirely successful and indicate the special suitability of geared diesel drive for a commercial towboat when the application is carefully worked out along correct engineering lines.

This arrangement combined the advantages of the large comparatively slow turning propeller of the old style steam tug with the economy of diesel operation. In this respect it may be said to approximate diesel electric tug performance with a considerably lower first cost and somewhat greater simplicity of operation. This recent installation is therefore of considerable significance to the commercial tug owner.

The DANDY is a fine lined iron-hulled tug for harbor and coastwise hauling of oil barges and general towing work. In the conversion the old stack was removed and the pilot house was lowered to permit passage under canal bridges. The vessel has a length between perpendiculars, 92 feet, 10 inches; a beam of 20 feet; and a depth of 9 feet, 7 inches. The draft is 8 feet. Gross tonnage is 115 and net tonnage, 57. Speed in knots after conversion is 10. The fuel capacity is 4500 gallons in three tanks. The weight of the fuel is 18 tons. Fuel consumption is 0.40 pound per brake horsepower per hour, and the consumption in tons per day is 1.73. This tug has a radius of operation of 2500 nautical miles without refueling.

The four-cycle, six-cylinder main engine was designed and built by the Cooper-Bessemer Corp. and is that company's model JT-6. The bore is 11½ inches and the stroke 15 inches. Mechanical efficiency is rated at 85 per cent. The length overall of the engine proper is 16 feet, 2¼ inches, while the length of the reduction gear is 5 feet, 4⅛ inches; making the total length overall of engine and reduction gear 21 feet, 6⅜ inches. The overall height of the engine from the centerline of the shaft is 8 feet, 11¼ inches, and the width overall is 3 feet, 6⅝ inches. Weight of the engine alone is 35,200 pounds; and the weight of the engine and reduction gear combined is 41,600 pounds, which makes the weight per brake horsepower 115 pounds.

The engine is directly reversible. There is one belt-driven Gardner-Denver 60-cubic-foot capacity compressor; and also one independent compressor, model FD 4, Cooper-Bessemer combined gasoline engine unit.



Tugboat Dandy converted from steam drive to diesel-geared drive with Cooper-Bessemer engine

(*Continued from Page 37*)

built for use on the Great Lakes, because of treaty provisions with Canada in regard to naval vessels on these waters.

In part, the resolution stated: "We believe that the two services are entirely different in their requirements and practice; naval officers do not lend themselves to the requirements of the coast guard in the matter of handling and controlling shipping in congested channels. Life saving service would be a new field for naval officers and it is not believed that the officers themselves would relish the North Atlantic iceberg service; the Behring Sea seal service; or the policing of our coasts in the search of rum runners and other law violators."

Sells Foreign Ships

Toward the end of November it was established that the International Mercantile Marine—Roosevelt Steamship Co. had disposed of its Leyland line's services from England to the West Indies, Mexico and the Gulf to the Harrison line, Liverpool. The seven vessels included in this sale aggregate 45,130 gross tons and are the ATLANTIAN, DAKARIAN, DARIAN, DAVISIAN, DAYTONIAN, DELILIAN and DORELIAN. These vessels are all of about 6500 gross tons, and were built in Great Britain between 1921 and 1928.

In confirming the report of the sale, P. A. S. Franklin, president of the International Mercantile Marine said:

"In disposing of the Leyland line services and part of its fleet of British flag cargo ships, we are continuing the policy inaugurated several years ago to divest ourselves of all foreign flag shipping in order to concentrate on the development of American shipping in the transatlantic and other trades. We plan to dispose of the remainder of the Leyland line fleet and a few other foreign ships that we have on our hands just as soon as we can possibly do so."

French Line Appointment

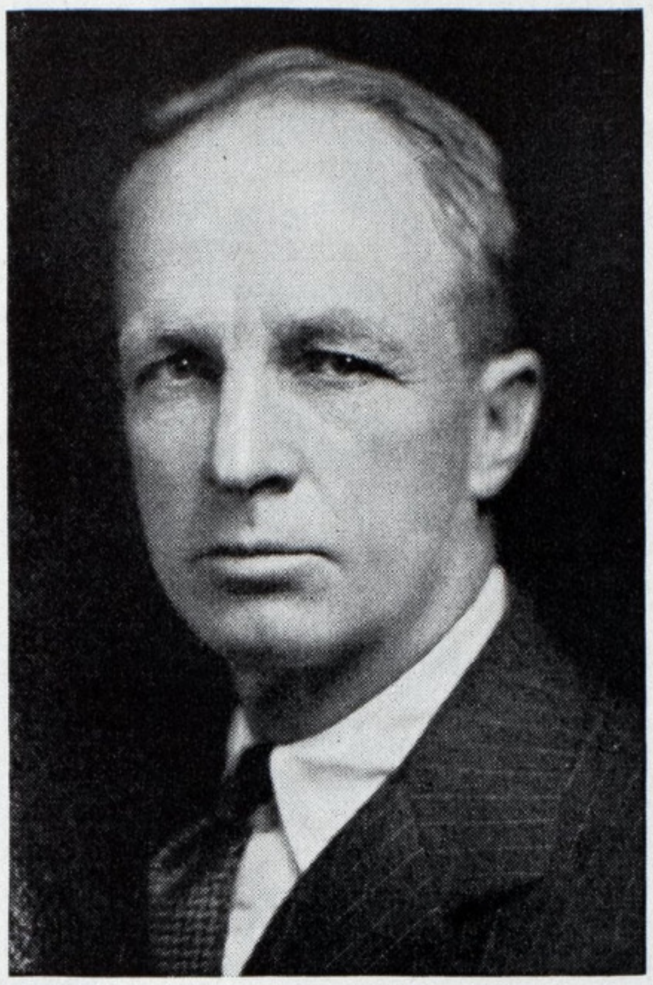
Henry Morin de Linclays, resident general manager of the French Line, New York, recently announced the appointment of Marcel Castelnau as assistant marine superintendent in New York, succeeding Robert Estachy, recently made the company's southern representative, for the Gulf.

Castelnau was born in France April 13, 1898, and is a graduate of the Lycee Corneille in Rouen, the College Chaptal in Paris and the French National School of Navigation in St. Malo and Le Havre where he attained his master's license permitting him to command a vessel in any waters the world over.

Personal Sketches of Marine Men

Eads Johnson, Consulting Naval Architect and Marine Engineer

By B. K. Price



OF A family engaged in ship repairing he graduated at Tulane in mechanical engineering and studied naval architecture at Cornell university.

HIS practical experience in building and designing a wide variety of types of vessels covers a period of 35 years of continuous activity.

AS CONSULTING naval architect and marine engineer he has been responsible for many novel innovations in machinery and hull construction.

THE youngest son of the late Lewis Johnson, founder of the Johnson Iron Works, Eads Johnson was born in New Orleans in 1878 and was graduated from Tulane university in 1898, with a degree in mechanical engineering. He then went to Cornell university for a post graduate course in marine engineering and naval architecture. Rounding out 35 years in the shipbuilding industry, he has come to know both salt and fresh water, both the North and the South.

His practical experience in shipbuilding began at Lewis Nixon's shipyard at Elizabethport, N. J., and continued at the old Cramp shipyard in Philadelphia, where he served as a foreman for two years. He first came to New York as representative of B. B. Crowninshield, the noted Boston naval architect.

Then came an appointment as superintendent of construction in the lighthouse service with headquarters at Tompkinsville, S. I. In this post, he had charge of all floating equipment in the third district. He resigned this post to become engineer and general manager of the dry dock and shiprepair plant of James Shewan & Sons, New York, from which post he resigned to take charge of special work for the New York Shipbuilding Co.

In 1910 he opened his own offices in New York as naval architect, marine engineer and surveyor. His first important commission was the design of the tug INVINCIBLE, for Horace Havemeyer. This was followed by a variety of other vessels, among which were the first oil burning tug in New York harbor, MEXPET, and six large tankers for the Mexican Petroleum Co.

When the United States entered the World war, Mr. Johnson was called to Washington by General Goethals, and was placed in charge of the New York district, extending from Cornwall, Pa., to Stonington, Conn., with territory up the Hudson and Connecticut rivers. Sixteen frantically busy shipyards were under Mr. Johnson's jurisdiction; his was the task of co-ordinating the work of all these yards. Several months later General Goethals resigned his charge and Mr. Johnson also resigned.

He then became executive head of a new shipyard in Wilmington, N. C., established by the Fuller Construction Co. under the name of the Carolina Shipbuilding Corp. This company secured contracts for the construction of twelve 9400-ton cargo ships and were at work on them when the war ended. Shortly after the armistice he resigned to re-establish his New York office and also became vice president of the Johnson Iron Works, New Orleans, then operated by his brothers, the late Wilmer Johnson and Warren Johnson, who is now president. After two years he returned to New York to assume active charge of his New York office.

With an over-abundance of large ships, Mr. Johnson turned to the design of smaller craft, such as ferries, tugs, and the like. In 1921 he designed the first direct diesel type ferry and, shortly thereafter, the first diesel electric ferries with center motor control. Six of these electric ferries are now being operated by the Electric Ferries Inc., plying between Twenty-third street, New York, and Weehawken, N. J. He also designed the first diesel electric freight boat, E. F. FARRINGTON, and iron screw tunnel diesel towboat, JENNIE BARBOUR.

One of his latest innovations is a unique all-welded craft, 65 feet long, powered with a 70 horsepower Fairbanks-Morse diesel engine, and capable of carrying 12 automobiles at a load. Two of these ferryboats are now in operation between Elizabethport, N. J., and Staten Island.

As consultant for the Citizens Budget commission in New York, he recently completed an extensive survey of marine operations of various departments of the city government. His findings embodied in a comprehensive report, outline how the operation of the municipal ferries could be made to show a profit instead of the customary $2,000,000 annual deficit. Mr. Johnson is now acting chairman of the Eastern division of ferryboat operators, comprising 28 owners in the area from Eastport, Me., to Key West, Fla., and is engaged in formulating their code of fair practice under the NRA.

He is a member of the Society of Naval Architects and Marine Engineers, of the New York Maritime exchange, and of India House. Two sons, Eads Jr and Lewis, are now at Yale university, preparing to follow the engineering profession.

Iron Hull Service Boat of Welded Construction

Electric arc welding is becoming more and more an established method in the construction of vessels, and particularly so for those of smaller size. A year and a half ago the Hans Hansen Welding Co., Toledo, O., completed an all electric arc welded vessel called the G. F. Becker for use as a mail boat on the Detroit river. This vessel is a substantial craft of considerable size, her length overall being 64 feet, 9 inches and molded beam 16 feet. She is powered with a 125 to 150 horsepower Fairbanks-Morse diesel engine and has a speed of over 13 miles per hour. In the year and a half that has elapsed, the Becker has been in constant service carrying out the provisions of the mail contract of her owner, Frank Becker, Detroit. She has proved entirely satisfactory in every respect according to reports received.

The same builder recently completed an all electric arc welded service boat for the Dunbar & Sullivan Dredging Co., Detroit. The new boat, shown in the accompanying illustration, is being used by the owner for carrying supplies and men to dredges at work in the Detroit river.

The hull of this vessel, which is 28 feet in length and 8 feet, 4 inches in beam, is constructed of iron of 11 gage thickness, supplied by the American Rolling Mill Co. This material known in the trade as "Armco" iron is said to be rustproof. No rivets whatever were used in the construction. The frames were made from 1½ x 1½ x 3/16 inches angles and 1½ x 3/16 inches flat bars. As all her seams and connections are welded the hull is virtually as if made from one single piece of iron.

The cabin is of all steel construction with steel welded window frames fitted with plate glass. The deck is of diamond floor plate which eliminates the hazard of slipping.

A 100 horsepower Kermath gasoline engine gives the boat a cruising speed of around 15 miles. The boat can be used during cold weather, as long as the river is navigable, as the ice will not have any effect on the welded seams.

The Delta line, owned and operated by the Mississippi Shipping Co. Inc., has removed its office from the Hibernia Bank building to the Board of Trade building, New Orleans.

Pacific Freight Market

Volume of business increased sharply during the month of November in all export trade from the Pacific coast. Regular lines reported full cargoes and space tight for the immediate future, according to information received from the chartering department of the General Steamship Corp.

As a consequence, the volume of charters effected during the month is about double that of any previous month of the year. Freight rates have advanced slightly and the trend is up. Probably the depreciation of the American dollar abroad has been the major factor in stimulating the buying of American products in export, but whatever the reason is, the fact remains that shipping business is showing the first real sign of a definite upward trend.

Several vessels were fixed on timecharter basis, mostly for short trips, as with the uncertainty in exchange rates, timecharter operators show no inclination to speculate on the future.

A good volume of business was done in tankers for both dirty and clean oils from California to various destinations, and at slightly improved rates of freight.

Italian Ship Performance

With the departure of the CONTE DI SAVOIA of the Italian Line from New York on Nov. 25 this notable vessel has completed her first year in service. During this period the CONTE DI SAVOIA has had the unique distinction of having made the trip between Italy and Ambrose Light, entrance to New York harbor, and return, without once being behind schedule.

This schedule called for a seven-day passage either way between Italy and New York, with stops at the Riviera and Gibraltar, and a five-day crossing between Gibraltar and New York.

On May 22 the SAVOIA made a new record of four days, 19 hours and ten minutes for the westbound crossing on the southern route.

The REX, sistership of the SAVOIA, later beat this record, and all Atlantic records, by making the westbound crossing from Gibraltar, over a course of 3181 nautical miles, in four days, 13 hours, 58 minutes, at an average speed of 28.92 knots, for which record the REX still holds the blue ribbon of the Atlantic.

H. H. Westinghouse Dies

Henry Herman Westinghouse, chairman of the board of directors of the Westinghouse Air Brake Co., and an outstanding mechanical engineer, died Nov. 18 at his home in Goshen, N. Y., at the age of 80.

He was one of seven brothers in a family of ten children and was born Nov. 16, 1853 in Central Bridge, Schoharie county, N. Y.

His engineering career began in the shop of his father who was a manufacturer of agricultural machinery. He attended the Union high school in Schenectady, N. Y., and studied mechanical engineering at Cornell university in 1871. The following year he came to Pittsburgh to become associated with the Westinghouse Air Brake Co. This company, founded largely upon the inventions of Mr. Westinghouse's brother George, had been organized in 1869. He became general manager in 1887 and vice president in 1899. Upon the death of his brother George in 1914, he became president, and was elected chairman of the board of directors a year later.

Second Class for Tourist

The Italian line is making an innovation in allotting the modern accommodations designated as second class for tourist use on the liners AUGUSTUS, ROMA, SATURNIA and VULCANIA. The first sailing on which this new bargain in travel is to become effective will be that of the ROMA sailing from New York Jan. 10 for Mediterranean ports.

This makes available superior accommodations at the low tourist fares. It is further evidence that transatlantic shipping companies are keeping up with the times and are giving passengers more for their money in the way of fast modern liners and luxurious accommodations than ever before.

Service boat for Dunbar & Sullivan Dredging Co., Detroit. Hull of this boat is of rustproof iron, upper works of steel. Electric arc welding was used throughout in construction. Speed 15 miles per hour

Marine Review

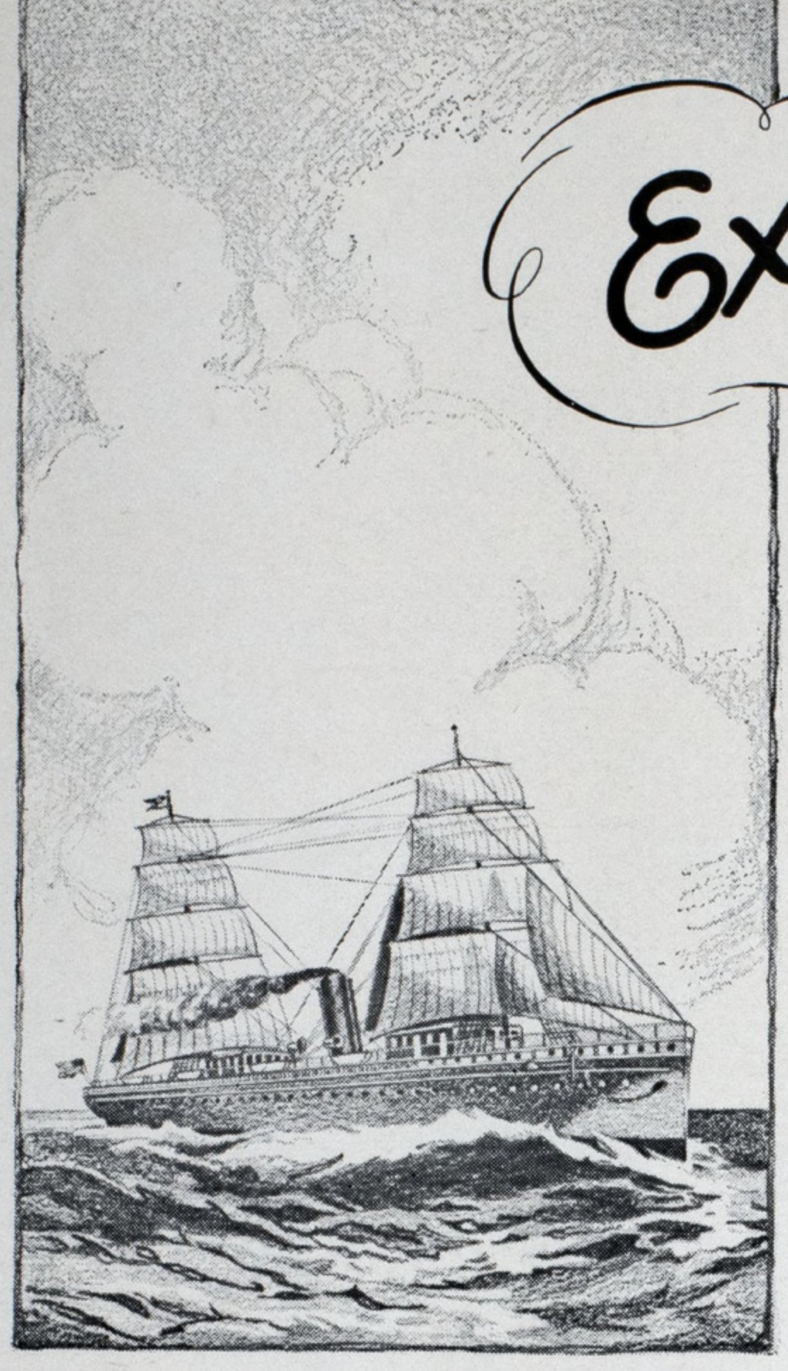
Reg. U.S. Pat. Off.

The National Publication Covering the Business of Transportation by Water

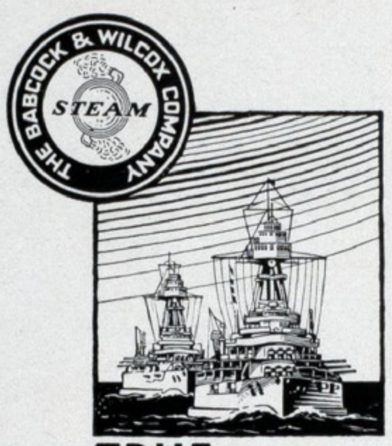
Cabin Stateroom—S. S. WASHINGTON

January, 1934

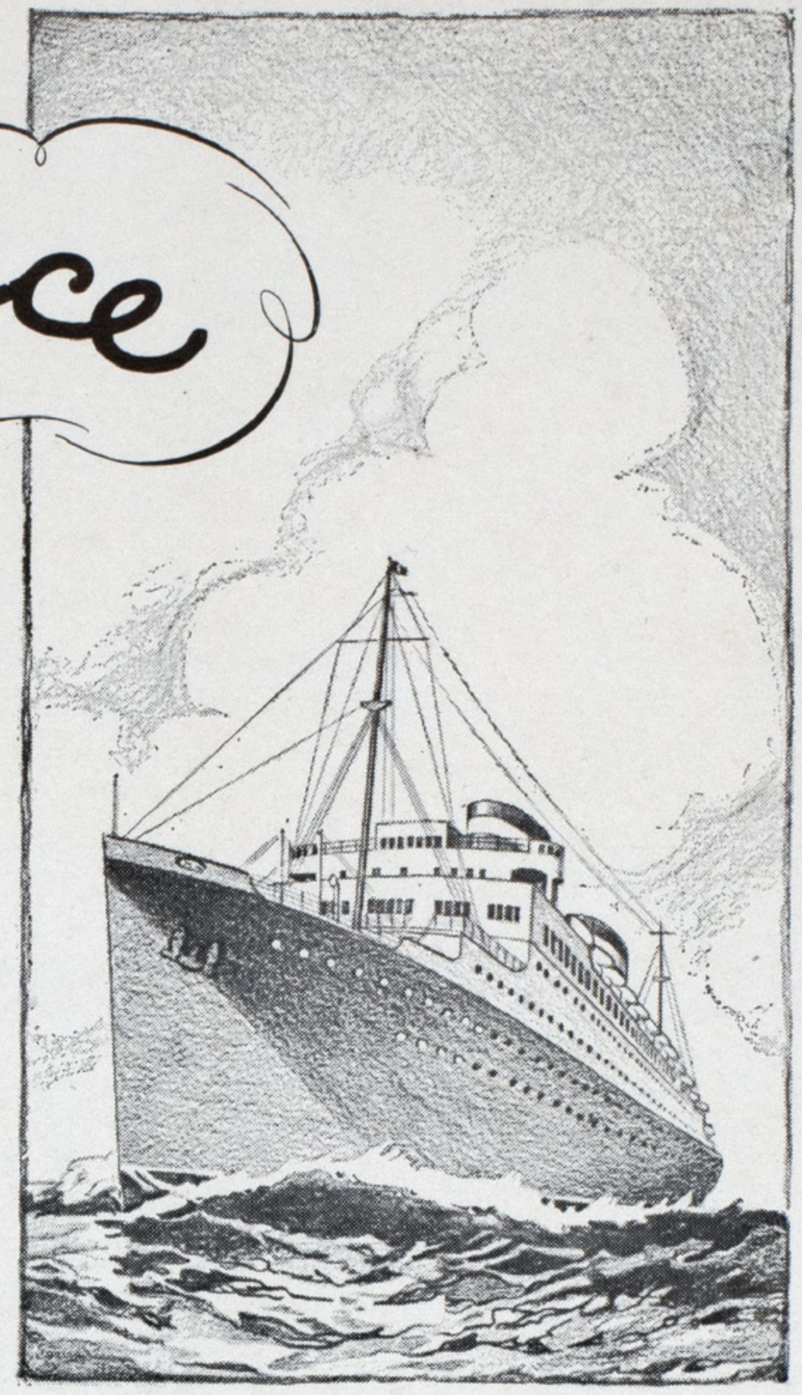
Experience



1875



TRUE LEADERSHIP



1933

Early in 1875, George H. Babcock and Stephen Wilcox built their first marine boiler.

In the fifty-eight years that have followed, this organization has built more marine boilers than the combined totals of all other manufacturers of marine boilers of the water-tube type. In building these boilers, The Babcock & Wilcox Company has accumulated a wealth of experience that has been constantly available to the Marine Industry.

This experience has not been limited to one type of boiler for one type of ship, but is expressed in the exclusive and advantageous features of designs available for, and installed in, every type of ship . . . liners, tugs, yachts, dredges, freighters, tenders, tankers, and the fighting ships of practically every country supporting a navy.

Furthermore, this extensive experience enables The Babcock & Wilcox Company, as the foremost manufacturer of marine steam-generating equipment, to solve new problems with unequalled certainty of favorable results, thereby increasing its recognized service to the Marine Industry.

BABCOCK & WILCOX

M-21

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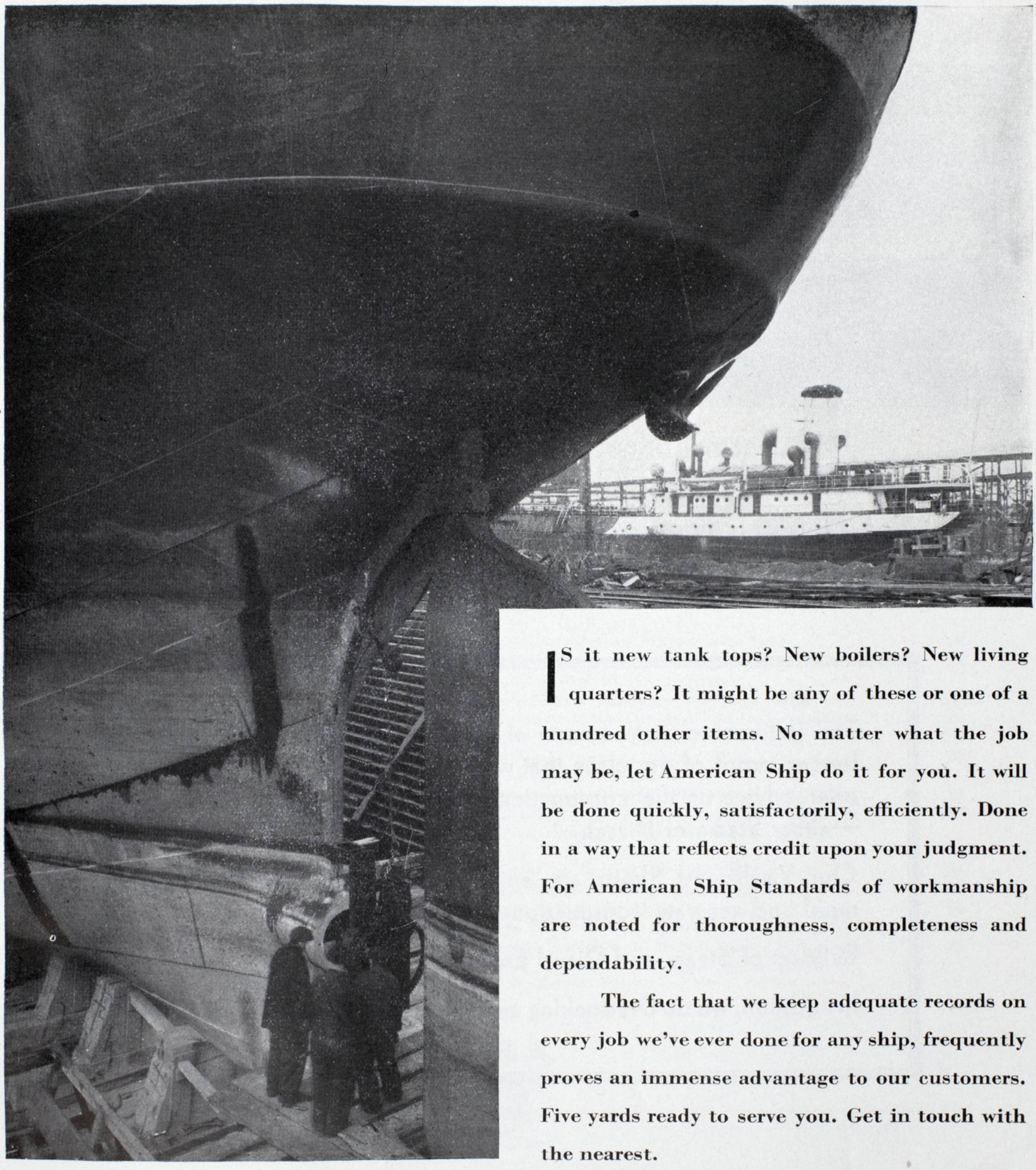
WHAT DO YOUR SHIPS NEED?



IS it new tank tops? New boilers? New living quarters? It might be any of these or one of a hundred other items. No matter what the job may be, let American Ship do it for you. It will be done quickly, satisfactorily, efficiently. Done in a way that reflects credit upon your judgment. For American Ship Standards of workmanship are noted for thoroughness, completeness and dependability.

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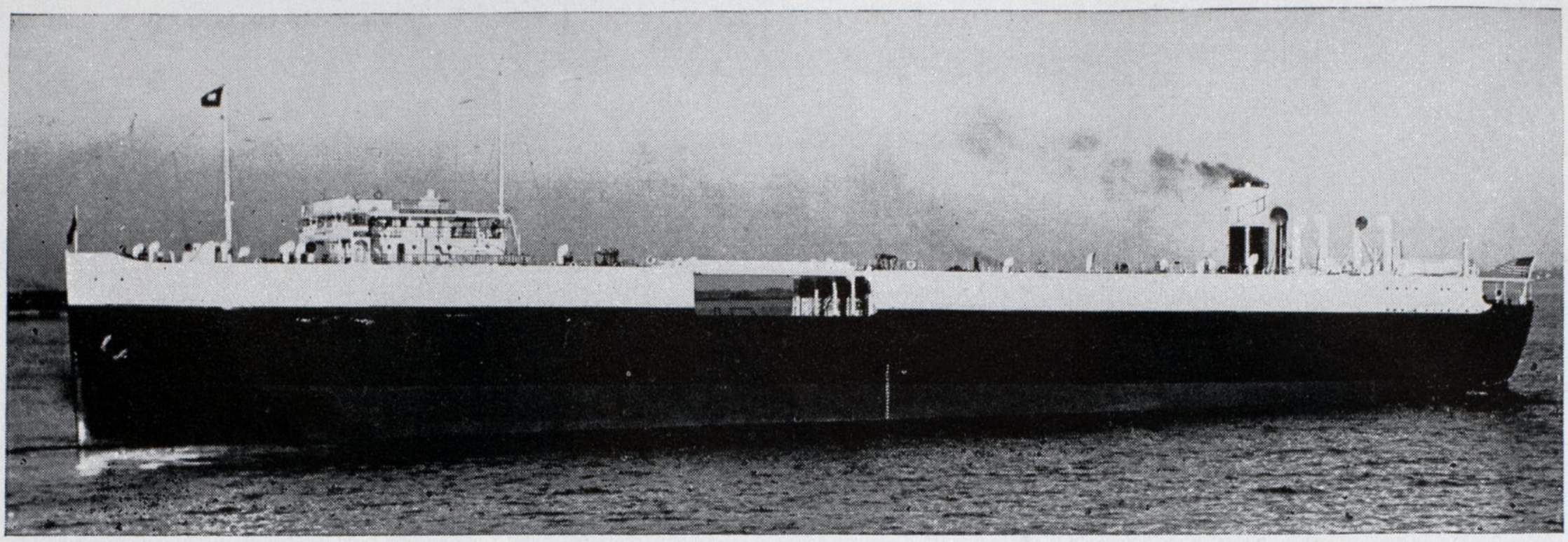

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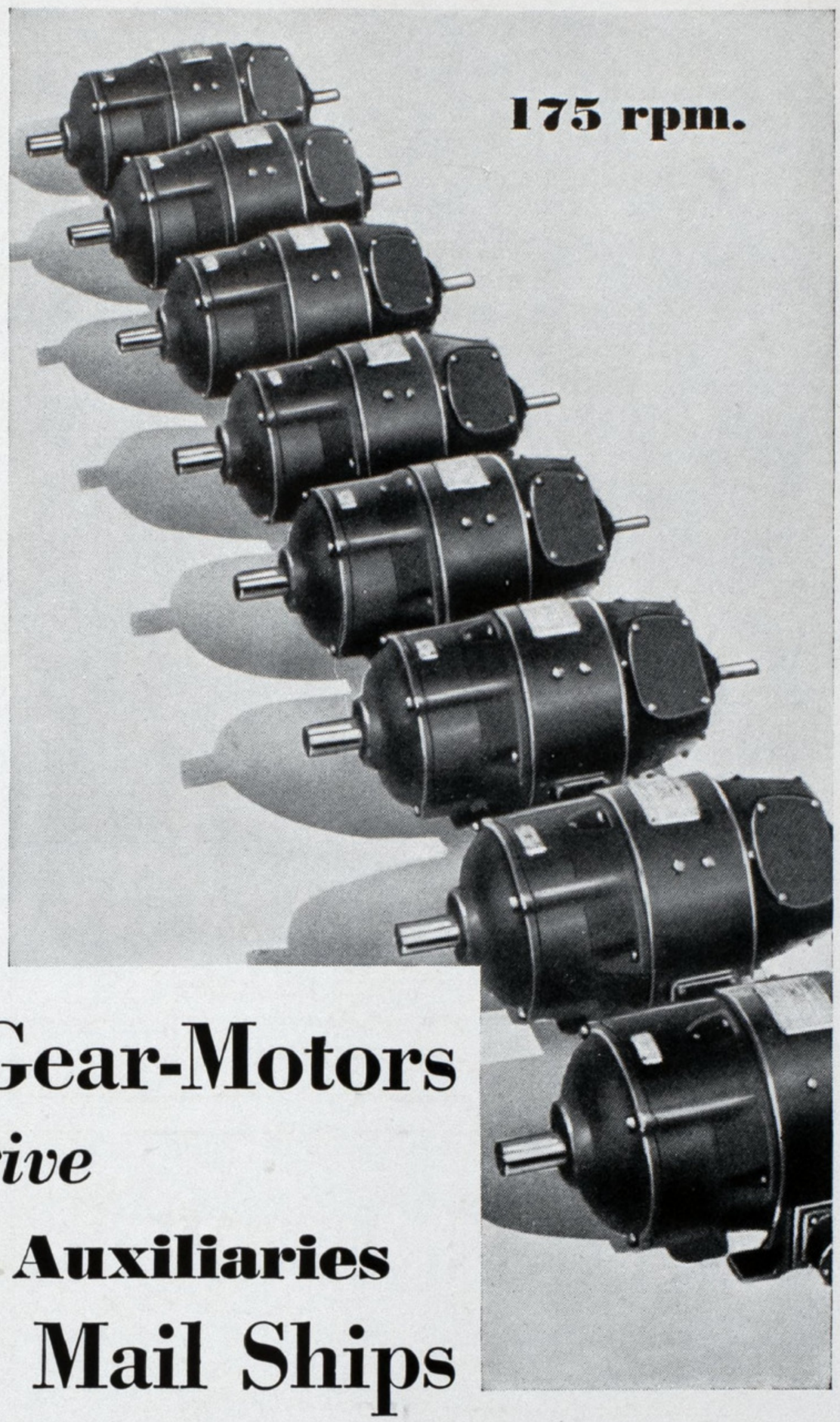
ELECTRIC EQUIPMENT ENGINEERED FOR MARINE SERVICE



These G-E Gear-Motors *drive* Low-speed Auxiliaries on Panama Mail Ships

WHEN you consider the features of G-E gear-motors, you can readily appreciate the advantages of their use for certain low-speed auxiliary drives.

For Example

The sixteen units illustrated are two examples of the application of direct-current gear-motors. The eight on the left are rated 10 rpm., 1000-lb. ft. torque, and will be used for operating skylights. Those at the right are rated 175 rpm., 60-lb. ft. torque, and will be used for ladder hoists.

Features of the G-E Gear-motor

The G-E gear-motor is a motor with a built-in speed reducer — a single, compact unit which delivers full rated horsepower at the output shaft. It is compact—only slightly larger than standard motors—and efficient. It combines the economies of an 1800-rpm. motor with accurately cut helical gears which run in a bath of oil.

G-E gear-motors are available in all standard ratings, up to 600 rpm., for a-c. and d-c. service.

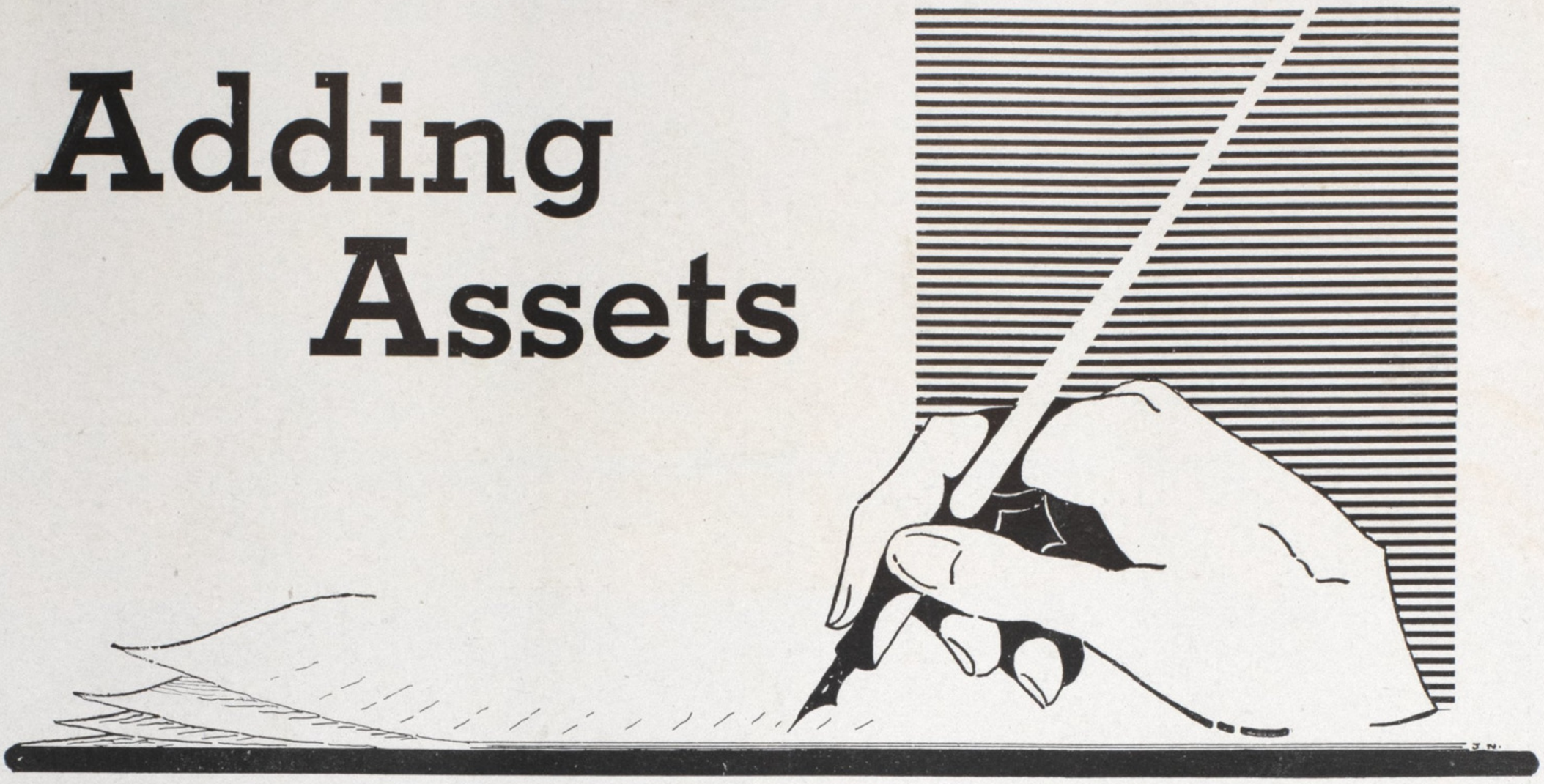
For Low-speed Drives

If your modernization program calls for dependable low-speed drives, investigate these G-E gear-motors. The G-E office nearest you will gladly assist and give you complete information. Or, address the General Electric Company, Dept. 6-201, Schenectady, N. Y.

231-35

GENERAL ELECTRIC

Adding Assets



BY THE operation of wise shipping laws, America in ten years time has transferred from foreign nations to this country a national income of $2,100,000,000. That is $210,000,000 a year or ten times what this legislation has averaged to cost each year. That alone is worth while.

But that is not all. Everyone who has studied the subject knows that wherever the American ship goes there we find an expanded American trade. Everyone who has considered the matter realizes that the building and operating of ships furnishes employment to many Americans. Everyone who has given thought to our sea power understands that the Navy without suitable types of merchant ships is handicapped to such an extent that it is almost useless.

Continue to build up an adequate Merchant Marine, for America cannot rightly prosper without it.

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